MINERAL CREEK From Devil's Canyon to Gila River 15050100 – 012B 19.6 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Ww – Impaired FBC – Inconclusive FC – Inconclusive AgL – Attaining	Category 5 Impaired	Selenium, copper, and low dissolved oxygen	Adding low dissolved oxygen. Added selenium in 2004. Mine under a consent decree to mitigate copper pollution.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 01/10/2000 – 06/17/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Indian Gardens MGMIN008.81 103331	ASARCO Effectiveness monitoring	217-218 total and dissolved metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium silver, thallium, and zinc	218 samples: Nitrite/nitrate, pH, dissolved oxygen	217 Fluoride 217 Total dissolved solids 217 Turbidity
At tunnel inlet MGMIN006.99 103332	ASARCO Effectiveness monitoring			
At tunnel outlet MGMIN003.69 103333	ASARCO Effectiveness monitoring			
At channel outlet MGMIN002.65 103334	ASARCO Effectiveness monitoring			
At Highway 177 bridge MGMIN001.38 100472	ASARCO Effectiveness monitoring			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Only reviewed exceedances that occurred after extensive treatment initiated in 2001.			
Copper (dissolved)	8.0 µg/L at 58 mg/L hardness 6.7 µg/L at 48 mg/L hardness 9.1 µg/L at 66 mg/L hardness A&Ww acute	03/06/2003 – 12 µg/L 03/11/2004 – 17 µg/L 2/15/2005 – 20 µg/L	Remains Impaired – 3 exceedances during the last 3 years of monitoring. Copper exceedances occurred during high flows.
Dissolved oxygen	6.0 mg/L A&Ww	Too many to list here. Did not meet standards in 29 samples.	Impaired – Low dissolved oxygen in 29 of 218 samples (binomial). Cause of low dissolved oxygen is unknown, but may be due to natural conditions, such as groundwater upwelling.
Selenium	2.0 µg/L A&Ww chronic	35 sampling events – Too many to list here.	Remains Impaired – 35 exceedances during the assessment period. 28 were at or above 5 µg/L.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient *E. coli* and mercury to assess FBC and FC.		Lab detection limits for dissolved metals (cadmium, copper, lead, nickel, and silver) were higher than A&W chronic criteria in at least 7 samples.
MONITORING RECOMMENDATIONS		High Priority –Collect selenium and dissolved oxygen samples to support TMDL development. Collect copper samples to determine effectiveness of treatment. Use lower detection limits for dissolved metals. Collect missing core parameters to represent at least 3 seasons during an assessment period.	

MINNEHAHA CREEK From headwaters Hassayampa Creek 15070103 -- 029 12.7 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 03/05/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Near Hassayampa River MGMHA000.24 102955	ADEQ TMDL	1 total and dissolved metal sample: Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, manganese, mercury, silver, and zinc 1 total metals only: Lead and nickel	1 Dissolved oxygen and pH	1 Total dissolved solids

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient monitoring events	Lab detection limits for selenium and dissolved metals (lead, mercury, nickel) were higher than A&Wc chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Collect additional core parameters to represent at least 3 seasons during an assessment period. Use lower lab detection limits for selenium and dissolved metals.	

PAINTED ROCKS RESERVOIR 15070101 – 1020A 100 Acres (This is a flood retention basin)	USE SUPPORT		OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	ADEQ	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive AgI – Inconclusive AgL – Inconclusive	Category 3 Inconclusive		
	EPA	FC – Impaired	Category 5 Impaired	DDT, toxaphene, and chlordane in fish tissue.	DDT, toxaphene, and chlordane were listed by EPA in 2002.

Light blue highlights indicate EPA impairments based on EPA assessment and listing criteria. This listing may change when EPA reviews and approves the 2006/2008 impaired waters list. Such listings do not satisfy requirements established in ADEQ's Impaired Water Identification Rule; therefore, they are not included in the list of ADEQ's Impaired waters (Appendix B and Appendix C).

MONITORING USED IN THIS ASSESSMENT			
No Current Data			Fish consumption advisory due to DDT, toxaphene, and chlordane in fish tissue

DATA GAPS AND MONITORING NEEDS	
DISCUSSION OF PESTICIDE IMPAIRMENT	Evidence of potential pesticide impairment: • A risk assessment completed in 2006 indicates that the fish consumption advisory for these pesticides should remain in effect. • A fish consumption advisory issued in 1991 remains in effect.
MONITORING RECOMMENDATIONS	High Priority – Collect samples to support pesticide TMDL development.

See also Painted Rock Lake assessment in the Colorado River – Lower Gila Watershed

PAPAGO PARK PONDS 15060106B – 1030 24 Acres	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive PBC – Inconclusive FC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATES: 12/20/2002 and 04/17/2003		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At dam MGPAP - A 101047	ADEQ Ambient	2 total and dissolved: Antimony, arsenic, barium, beryllium, boron, cadmium, copper, lead, mercury, manganese, nickel, selenium, silver, and zinc 2 total and 0-1 dissolved: Chromium	2 samples: Ammonia, total nitrogen, nitrite/nitrate, total phosphorus, total Kjeldahl nitrogen, dissolved oxygen, pH	2 *E. coli* bacteria 2 Fluoride 2 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters.	Insufficient sampling events	Lab detection limit for dissolved mercury was higher than A&Ww chronic criterion.
MONITORING RECOMMENDATIONS		Low Priority –Collect missing core parameters to represent at least 3 seasons during an assessment period. Use a lower lab detection limit for dissolved mercury.	

POTTS CANYON From headwaters to Queen Creek 15050100 – 1856 10.6 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 08/10/2005 NUMBER AND TYPES OF SAMPLES Metals	Nutrients – Related	Other
Above Queen Creek MGPTC000.01 104438	ADEQ TMDL	1 total and dissolved: Cadmium, chromium, copper, mercury, and zinc 1 total metals only: Arsenic, lead, manganese	1 samples: Dissolved oxygen, and pH	1 Fluoride 1 Total dissolved solids 1 Suspended sediment concentration

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Arsenic	50 µg/L FBC	08/10/2005 – 79 µg/L	Inconclusive – Only 1 sampling exceedance. (Binomial)
Copper (dissolved)	29.3 µg/L at >400 mg/L hardness A&Ww chronic	08/10/2005 – 49 µg/L	Inconclusive – Only 1 exceedance during the assessment period. Exceedance occurred during a summer storm and may not represent chronic (4-day average) conditions.
Lead	15 µg/L – FBC	08/10/2005 – 170 µg/L	Inconclusive – Only 1 exceedance. (Binomial)
Mercury	0.6 µg/L FC	08/10/2005 – 1.1 µg/L	Inconclusive – Only 1 exceedance (Binomial)
Suspended sediment concentration (SSC)	Geometric mean 80 mg/L A&Ww	08/10/2005 – 1859 mg/L	Inconclusive – Only 1 sampling date. Insufficient samples to assess, as need a minimum of 4 samples to calculate a geometric mean and compare to standard.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Arsenic, copper, lead, mercury, and suspended sediment	Insufficient core parameters	Insufficient sampling events	Lab detection limits for selenium and dissolved mercury were higher that A&Ww chronic criteria.

MONITORING RECOMMENDATIONS	
	Medium Priority –Collect arsenic, copper, lead, mercury, and suspended sediment concentration samples due to exceedances. Recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted. Collect sufficient core parameters to represent at least 3 seasons during an assessment period. Use lower lab detection limits for selenium and dissolved mercury.

QUEEN CREEK From headwaters to Superior WWTP discharge 15050100 – 014A 8.8 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&We – Impaired PBC – Attaining AgL – Attaining	Category 5 Impaired	Copper	Copper on list since 2002. TMDL being developed.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 04/10/2003 – 08/10/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Headwaters MGQEN045.93 103091	ADEQ TMDL	11-26 total and dissolved: Antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, silver, thallium, and zinc 12 total and 4-5 dissolved: Barium, boron, selenium 26 total and 1 dissolved: Manganese	15-25 samples: Nitrite/nitrate, pH, dissolved oxygen	7 *E. coli* bacteria 13 Fluoride 15 Total dissolved solids 5 Suspended sediment concentration 13 Turbidity
Below Omya Pump Station Spring MGQEN044.42 103092	ADEQ TMDL and Resolution Cu Effectiveness			
Above Oak Flat MGQEN041.74 103093	ADEQ TMDL			
Below Oak Flat MGQEN041.34 103094	ADEQ TMDL			
At boulder hole MGQEN040.17 103463	Resolution Copper Effectiveness			
Below Superior water tank MGQEN039.75 103564	ADEQ TMDL			
Magma Ave and Queen Creek MGQEN038.73 103095	ADEQ TMDL			
Below NPDES Permit discharge MGQEN037.09 103096	ADEQ TMDL			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (dissolved)	18.0 µg/L at 76 mg/L hardness 8.7 µg/L at 35 mg/L hardness A&We acute	12/29/2004 – 44 µg/L 08/10/2005 – 49 µg/L	Remains impaired – 2 exceedances during the last 3 years of monitoring. Exceedances are occurring at normal flows (0.6 cfs).

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	All core parameters were collected		
MONITORING RECOMMENDATIONS		High Priority –Collect copper samples to support TMDL development.	

QUEEN CREEK From Superior WWTP discharge to Potts Canyon 15050100 – 014B 5.9 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Wedw – Impaired PBC – Inconclusive	Category 5 Impaired	Copper	Copper on 303(d) List since 2004. TMDL being developed

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 11/14/2002 – 08/30/2005 NUMBER AND TYPES OF SAMPLES Metals	Nutrients – Related	Other
Above Boyce Thompson Arboretum MGQEN034.66 100624	ADEQ Ambient and TMDL	4-7 total and dissolved: Antimony, arsenic, beryllium cadmium, chromium, copper, and zinc 5-7 total and 0-2 dissolved: Boron, lead, manganese, and mercury 2 selenium	4-7 samples: Ammonia, total nitrogen, nitrite/nitrate, total phosphorus, nitrite/nitrate, pH, dissolved oxygen	4 *E. coli* bacteria 6 Fluoride 4 Total dissolved solids 5 Suspended sediment concentration 4 Turbidity 2 Chlorine
State Park logger location MGQEN034.25 103544	ADEQ TMDL			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Chlorine	11 µg/L A&Wedw acute	03/31/2003 – 90 µg/L	Inconclusive – Only 1 exceedance in 2 samples.
Copper (dissolved)	49.6 µg/L at >400 mg/L hardness A&Wedw acute	11/14/2002 – 50 µg/L	Remains impaired – 1 exceedance during the last 3 years of monitoring.
Copper (dissolved)	29.3 µg/L at >400 mg/L hardness 29.3 µg/L at >400 mg/L hardness 23.5 µg/L at 310 mg/L hardness A&Wedw chronic	11/14/2002 – 50 µg/L 01/13/2003 – 37 µg/L 08/10/2005 – 33 µg/L	Remains impaired – 1 of these 3 exceedances (33 µg/L) was during an elevated flow (2.3 cfs), so may not represent chronic conditions (4 day exposure). Therefore, 2 exceedances in a 3-year period.
Dissolved oxygen	3.0 mg/L (daytime) A&Wedw	05/19/2003 – 1.6 mg/L	Inconclusive – Only 1 exceedance in 7 samples. (Binomial) (Note: sample was collected at 11 am.)
Selenium	2.0 µg/L A&Wedw chronic	11/14/2002 – 5.8 µg/L	Inconclusive – Only 1 exceedance in the last 3 years of monitoring. (See note below about lab detection limits)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Chlorine, dissolved oxygen, and selenium	Collected all core parameters		Lab detection limit for selenium and dissolved mercury were higher than A&Wedw chronic criteria in 1 or more samples.
MONITORING RECOMMENDATIONS		High Priority –Collect copper samples to support TMDL development. Collect chlorine, dissolved oxygen, and selenium samples due to exceedances. Use lower detection limit for selenium and dissolved mercury.	

QUEEN CREEK	USE SUPPORT	OVERALL ASSESSMENT	
From Potts Canyon to Whitlow Canyon 15050100 – 014C 8.0 Miles	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 08/10/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Queens Station MGQEN030.06 103098	ADEQ TMDL	1 total and dissolved: Cadmium, chromium, copper, mercury, and zinc 1 total metals only: Arsenic, lead, manganese	1 samples: Dissolved oxygen, and pH	1 Fluoride 1 Total dissolved solids 1 Suspended sediment concentration

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Arsenic	50 µg/L FBC	08/10/2005 – 52 µg/L	Inconclusive – Only 1 sampling exceedance. (Binomial)
Copper (dissolved)	24.6 µg/L at 190 mg/L hardness A&Ww acute	08/10/2005 – 39 µg/L	Inconclusive – Only 1 exceedance in 3-year period.
Mercury	0.6 µg/L FC	08/10/2005 – 1.1 µg/L	Inconclusive – Only 1 exceedance. (Binomial)
Suspended sediment concentration (SSC)	Geometric mean 80 mg/L A&Ww	08/10/2005 – 88 mg/L	Inconclusive – Although sample was marginally above the 80 mg/L criterion, there were insufficient samples to assess, as need a minimum of 4 samples to calculate a geometric mean and compare to standard. Also, the sample was collected during a monsoon rain event, so would not be included in the geometric mean calculation.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Arsenic, copper, mercury, and suspended sediment	Insufficient core parameters	Insufficient sampling events	Lab detection limits for selenium and dissolved mercury were higher that A&Ww chronic criteria.

MONITORING RECOMMENDATIONS	Medium Priority –Collect arsenic, copper, mercury, and suspended sediment concentration samples due to exceedances. Recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted. Collect sufficient core parameters to represent at least 3 seasons during an assessment period. Use lower lab detection limits for selenium and dissolved mercury.

SALT RIVER From Granite Reef Dam for 2 kilometers 15060106B-001A 1.6 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive DWS – Inconclusive AgI – Inconclusive AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 07/19/2002 – 12/04/2003		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Granite Reef diversion dam MGSLR041.57 102769	AGFD Ambient	3-4 total metals only: Arsenic, barium, cadmium, chromium, copper, lead, manganese, selenium, and zinc	5-7 samples: Ammonia, total nitrogen, nitrite/nitrate, total phosphorus, total Kjeldahl nitrogen, dissolved oxygen, pH	6 Total dissolved solids 2 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Arsenic	50 µg/L FBC, DWS	07/19/2002 – 148 µg/L*	Inconclusive – Only 1 exceedance in 4 samples. (Binomial requires a minimum of 5 exceedances and 20 samples to assess as impaired.) *This exceedance may be related to the Rodeo-Chediski fire (June 18th through July 7th) which led to increased flow in Salt River during the 2002 monsoon season.
Barium	2000 µg/L DWS	07/19/2002 – 2780 µg/L*	Inconclusive – Only 1 exceedance in 4 samples. (Binomial) *See note above.
Chromium	100 µg/L FBC, DWS	07/19/2002 – 184 µg/L*	Inconclusive – Only 1 exceedance in 4 samples. (Binomial) *See note above.
Lead	15 µg/L FBC, DWS	07/19/2002 – 234 µg/L* 07/31/2002 – 44 µg/L*	Inconclusive – 2 exceedances in 4 samples. (Binomial) *See note above.
Manganese	980 µg/L DWS	07/19/2002 – 7640 µg/L* 07/31/2002 – 1960 µg/L*	Inconclusive – 2 exceedances in 5 samples. (Binomial) *See note above.
Nickel	140 µg/L DWS	07/19/2002 – 218 µg/L*	Inconclusive – Only 1 exceedance in 4 samples. (Binomial) *See note above.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Chromium and lead	Insufficient dissolved metals (cadmium, copper, and zinc), E. coli bacteria, mercury, fluoride, and boron to assess A&Ww, FBC, FC, DWS, AgI.		
MONITORING RECOMMENDATIONS		Medium Priority – Collect chromium and lead due to exceedances. Collect core parameters to represent at least 3 seasons during an assessment period.	

SALT RIVER From 2 kilometers below Granite Reef Dam to Interstate 10 bridge 15060106B-001B 19 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&We – Inconclusive PBC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 01/12/2005 – 01/21/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Priest Drive USGS #09512165 MGSLR022.76 101493	AGFD Ambient	2 total metals only: Antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, and zinc 2 total metals only: Boron, manganese, and selenium	2 samples: Ammonia, total nitrogen, nitrite/nitrate, total phosphorus, total Kjeldahl nitrogen, dissolved oxygen, pH	2 *E. coli* bacteria 2 Fluoride 2 Total dissolved solids 2 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events.	
MONITORING RECOMMENDATIONS		Low Priority – Collect sufficient core parameters to represent at least 3 seasons during an assessment period.	

SALT RIVER From Interstate 10 bridge to 23rd Avenue WWTP discharge 15050106B-001C 7.9 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&We – Inconclusive PBC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 07/19/2002 – 12/04/2003		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At 19th Avenue bridge MCSLR013.36 102767	AGFD Ambient		1 sample: Ammonia, nitrite/nitrate, total phosphorus, total Kjeldahl nitrogen, dissolved oxygen, pH	1 Total dissolved solids

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	
MONITORING RECOMMENDATIONS		Low Priority – Collect core parameters to represent at least 3 seasons during an assessment period.	

SALT RIVER From 23rd Avenue WWTP discharge to Gila River 15060106B-001D 14.1 Miles	USE SUPPORT		OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A D E Q	A&Wedw – Attaining PBC – Attaining FC – Inconclusive AgI – Attaining AgL – Attaining	Category 2 Attaining Some Uses		
	E P A	FC – Impaired	Category 5 Impaired	DDT, toxaphene, and chlordane in fish tissue.	DDT, toxaphene, and chlordane were listed by EPA in 2002.

Light blue highlights indicate EPA impairments based on EPA assessment and listing criteria. This listing may change when EPA reviews and approves the 2006/2008 impaired waters list. Such listings do not satisfy requirements established in ADEQ's Impaired Water Identification Rule; therefore, they are not included in the list of ADEQ's Impaired waters (Appendix B and Appendix C).

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 11/20/2001 – 08/09/2002		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below Tres Rios discharge MGSLR003.33 101265	ADEQ Ambient	4 total and dissolved metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, mercury, and zinc 4 total metals only: Boron, lead, and manganese	4 samples: Ammonia, total nitrogen, nitrite/nitrate, total phosphorus, total Kjeldahl nitrogen, dissolved oxygen, pH	4 *E. coli* bacteria 4 Fluoride 4 Total dissolved solids 4 Turbidity 3 Chlorine

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			Fish consumption advisory due to DDT, toxaphene, and chlordane in fish tissue

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Pesticides in fish tissue	Collected all core parameters		Lab detection limit for selenium was higher than A&W chronic criteria.
DISCUSSION OF PESTICIDE IMPAIRMENT		Evidence of potential pesticide impairment: • A risk assessment completed in 2006 indicates that the fish consumption advisory for these pesticides should remain in effect. • A fish consumption advisory issued in 1991 remains in effect.	
MONITORING RECOMMENDATIONS		High Priority – Collect pesticides data to support TMDL development. Use a lower detection limit for selenium.	

SKUNK CREEK	USE SUPPORT	OVERALL ASSESSMENT	
From headwaters to Agua Fria River 15070102 -- 003 30.4 Miles	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 11/29/2002 – 03/16/2003		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At 79th Avenue, north bank MGSKU001.43 101521	USGS Special study	3 total metals only: Cadmium, copper, lead, mercury, and zinc	3 samples: Ammonia, total nitrogen, nitrite/nitrate, total phosphorus, total Kjeldahl nitrogen, dissolved oxygen, pH	

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Lead	15 µg/L FBC	01/08/2003 – 18 µg/L	Inconclusive – 1 exceedance in 3 samples. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Lead	Insufficient dissolved metals (cadmium, copper, and zinc), *E. coli* bacteria, and mercury to assess A&Ww, FBC, and FC		
MONITORING RECOMMENDATIONS		Medium Priority – Collect additional lead data due to the exceedance. Collect core parameters to represent at least 3 seasons during an assessment period.	

SYCAMORE CREEK From Tank Canyon to Agua Fria River 15070102 – 024B 17.6 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Attaining FBC – Attaining FC – Attaining AgL – Attaining	Category 1 Attaining	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 12/21/2001 – 09/20/2002		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Sycamore Ranger Station MGSYD009.13 100704	ADEQ Ambient	4 total and dissolved metals: Antimony, arsenic, beryllium, cadmium, copper, and zinc 4 total and 0-2 dissolved: Boron, chromium, lead, manganese, mercury	4 samples: Ammonia, total nitrogen, nitrite/nitrate, total phosphorus, total Kjeldahl nitrogen, dissolved oxygen, pH	3 *E. coli* bacteria 4 Fluoride 4 Total dissolved solids 4 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Collected all core parameters		Lab detection limit for selenium was higher than A&Ww chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority – Use a lower lab detection limit for selenium.	

TEMPE TOWN LAKE 15060106B– 1588 220 Acres	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Attaining	Category 2 Attaining Some Uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 03/27/2001 – 07/22/2004 Weekly sampling from 01/04/2001 – 03/27/2006 NUMBER AND TYPES OF SAMPLES Metals	Nutrients – Related	Other
At downstream dam MGTTL - A 101316	ADEQ and City of Tempe Ambient	72 total and 0-1 dissolved: Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, and zinc	78 samples: Ammonia, total nitrogen, nitrite/nitrate, total phosphorus, total Kjeldahl nitrogen. 280 Dissolved oxygen 1332 pH	352 *E. coli* bacteria 6 Fluoride 11 Total dissolved solids 1317 Turbidity
Near upstream dam MGTTL - B 101315	ADEQ and city of Tempe Ambient			
Mid lake MGTTL - MID 102452	ADEQ and AGFD Ambient			
Mid depth MGTTL – MDEP (not in ADEQ's database)	City of Tempe Ambient (metals)			
Marina MCTTL – MAR (not in ADEQ's database)	City of Tempe Ambient (bacteria and metals)			
50 feet off shore MCTTL – 50 (not in ADEQ's database)	City of Tempe Ambient (field)			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	>6.0 mg/L A&Ww	After treatment in 2002: 07/15/2004 – 5.4 mg/L 07/22/2004 – 4.1 mg/L 07/29/2004 – 5.1 mg/L 08/05/2004 – 5.1 mg/L 10/22/2004 – 5.4 mg/L 08/29/2005 – 5.7 mg/L	Attaining – 6 low dissolved oxygen samples out of 280 samples (binomial). Dissolved oxygen was collected at only one of the City of Tempe sites (50 feet off shore). It was also collected when ADEQ and AGFD monitored. (Copper sulfate has been added to the lake since 2002 to control algal blooms.)
E. coli bacteria	235 CFU/100 ml FBC	02/14/2003 – 1700 CFU/100 ml 01/25/2005 – 240 CFU/100 ml 07/31/2003 – 900 CFU/100 ml 09/11/2003 – 240 CFU/100 ml	Inconclusive – Although there were four exceedances of standards during the last 3 years of monitoring, weight-of-evidence does not support listing the lake as impaired. See discussion below.
pH (high	<9.0 SU A&Ww, FBC	After treatment in 2002: 01/09/2006 – 9.3 SU (2 sites) 02/07/2006 – 9.3 SU	Attaining – Only 2 exceedances in 890 samples after treatment was begun in 2002. (Copper sulfate has been added to the lake since 2002 to control algal blooms.)
Mercury	0.6 µg/L FC	08/02/2001 – 0.7 µg/L 12/06/2001 – 0.7 µg/L 06/06/2002 – 0.7 µg/L	Attaining – 3 of 72 samples exceeded the criterion. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	**MISSING CORE PARAMETERS**	**MISSING SEASONAL DISTRIBUTION**	**DETECTION LIMITS NOT LOW ENOUGH**
	Insufficient dissolved metals to assess A&W (cadmium, copper, and zinc)		Lab detection limit for dissolved mercury was higher than A&Ww chronic criteria.
DISCUSSION OF *E. COLI* BACTERIA EXCEEDANCES	Although four exceedances occurred during the assessment period, ADEQ does not support listing this lake as "impaired" based on the following: 1. The exceedance on 2/14/2003 (1700 CFU) occurred when raging flood flows topped the upstream dam and entered the lake. The USGS gage on Indian Bend Wash recorded mean daily flow of 625 cfs (normal flow is 0 cfs). Such flood flows are naturally contaminated by bacteria. 2. The exceedances on 9/11/2003 and 1/25/2005 were both at 240 CFU. Both of these are below the 300 CFU screening value that must be exceeded for listing decisions. 3. Two of the exceedances (2/14/2003 and 1/25/2005) occurred during our coldest months when even incidental swimming while sailing is uncommon. 4. ADEQ has proposed changing its assessment methods for bacteria, so that the binomial method would be applied. Out of 352 samples, only 4 exceedances have occurred. 5. The City of Tempe is using the bacteria to determine when to restrict swimming. It monitors the lake weekly during the summer when sailing is more frequent and before any swimming events.		
MONITORING RECOMMENDATIONS	Medium Priority – Continue to collect *E. coli* bacteria samples. Collect missing core parameters to represent at least 3 seasons during an assessment period. Use a lower lab detection limit for dissolved mercury.		

TURKEY CREEK From headwaters to unnamed tributary at 341928/1122128 15070102 – 036A 9.1 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Attaining FBC – Inconclusive FC – Inconclusive AgI – Inconclusive AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 03/14/2000 – 12/19/2003		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Forest Road 261 MGTRK030.07 101523	ADEQ TMDL	3-9 total and dissolved metals: Arsenic, beryllium, cadmium, chromium, copper, lead, and zinc 3 total and 0-2 dissolved: Boron 1-2 total and 0-2 dissolved: Antimony, manganese, mercury	7-9 samples: Dissolved oxygen and pH. 1 sample: total nitrogen, nitrite/nitrate, total phosphorus, total Kjeldahl nitrogen	1 Suspended sediment concentration
At Forest Road 706 MCTRK029.80 101524	ADEQ TMDL			
At Goodwin, AZ MGTRK024.35 101626	ADEQ TMDL			
At Senator Weir MGTRK021.52 102519	ADEQ TMDL			
Upstream of 5000 MSL MGTRK021.44 102512	ADEQ TMDL			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	<90% A&Ww	12/19/2003 – 58.17%	Attaining – Low dissolved oxygen due to natural conditions of low flow and ground water upwelling. Flow 0.003 cfs.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient mercury, *E. coli*, and manganese to assess FC, FBC, and AgI.		Lab detection limits for selenium and dissolved metals (cadmium, copper, lead, mercury) were higher than A&Ww chronic criteria in at least 2 samples.
MONITORING RECOMMENDATIONS		Low Priority – Collect core parameters to represent at least 3 seasons during an assessment period. Use lower lab detection limits for selenium and dissolved metals.	

TURKEY CREEK From unnamed tributary at 341928/1122128 to Poland Creek 15070102 – 036B 21.0 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Ww – Impaired FBC – Impaired FC – Inconclusive AgI – Attaining AgL – Impaired	Category 4A Not Attaining	Copper and lead	TMDL o approved by EPA, in 2008. Delist cadmium and zinc.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 02/08/2000 – 02/23/2004		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At trail 202 MGTRK016.12 102517	ADEQ TMDL	17-46 total and dissolved metals: Arsenic, boron, cadmium, chromium, copper, lead, manganese, and zinc 37 total and 5 dissolved: Mercury 3-6 total metals only: Beryllium 1 total and dissolved: Antimony	20 Dissolved oxygen 46 pH 17 Total phosphorus 10 Nitrate/nitrite 1 Total nitrogen and total Kjeldahl nitrogen	4 Suspended sediment concentration 9 Cyanide
At corral MCTRK015.90 101538	ADEQ TMDL			
Upstream of Bear Creek MGTRK015.47 102511	ADEQ TMDL			
North of Cleator, at Forest Road 93 MGTRK007.28 101083	ADEQ TMDL			
Crown King Road bridge MGTRK004.42 101627	ADEQ TMDL			
Below Golden Belt Mine MGTRK004.33 102518	ADEQ TMDL			
Below Golden Turkey Mine MGTRK003.89 102510	ADEQ TMDL			
At old bend below Golden Belt and Golden Turkey MGTRK003.71 101082	ADEQ TMDL			
At Silver Cord Mine MGTRK001.53 100587	ADEQ TMDL			
At Poland Creek MGTRK000.09 102513	ADEQ TMDL			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Arsenic	50 µg/L – FBC 200 µg/L – AgL 1450 µg/L – FC 2000 µg/L – AgI	03/17/2003 – 2800 µg/L 08/14/2003 – 98 µg/L	Attaining – Exceeded the criteria in 2 of 17 events. (Binomial)
Cadmium	50 µg/L – AgI, AgL 84 µg/L – FC	09/09/2003 – 170 µg/L	Attaining – Only 1 exceedance in 46 samples. (Binomial)
Chromium	100 µg/L FBC	08/14/2003 – 147 µg/L	Attaining – 1 exceedance in 17 sampling events (1 in 30 samples). (Binomial)

Copper	500 µg/L – AgL	08/15/2003 – 569 µg/L	Attaining – 1 exceedance in 19 sampling events (1 in 46 samples) (Binomial)
Copper (dissolved)	17.2 µg/L at 130 mg/L hardness 49.6 µg/L at >400 mg/L hardness A&Ww acute	08/15/2003 – 25 µg/L	Remains impaired – 1 exceedances in the last 3 years of monitoring
Dissolved oxygen	6.0 mg/L A&Ww	12/19/2003 – 4.9 mg/L	Attaining – Low dissolved oxygen due to natural conditions of low flow and ground water upwelling. (Flow 0.001 cfs.)
Lead	14 µg/L – FBC 100 µg/L – AgL	09/11/2002 – 103 µg/L 02/26/2003 – 564 µg/L 03/17/2003 – 4,800 µg/L 08/14/2003 – 1235 µg/L 08/21/2003 – 38 µg/L	Remains impaired – Criterion 14 µg/L was exceeded in 5 of 20 sampling events (15 of 46 samples). Concentrations were greater than AgL criterion (100 µg/L) in 4 of 20 sampling events. (Binomial)
Lead (dissolved)	61.8 µg/L at >400 mg/L hardness A&Ww acute	08/21/2003 – 110 µg/L	Remains impaired – 1 exceedance in last 3 years.
Mercury	0.6 µg/L FC	03/17/2003 – 0.76 µg/L 08/15/2003 – 0.9 µg/L	Inconclusive – 2 of 4 sampling events exceeded the criterion. (7 of 18 samples) (Binomial requires a minimum of 5 exceedances and 20 samples to assess as impaired.)
Suspended sediment concentration (SSC)	Geometric mean 80 mg/L A&Ww	13/17/2003 – 490 mg/L	Inconclusive – Exceeded criterion during only sampling event monitored for this parameters. This sample was collected during storm flows, so could not be used in calculating the geometric mean. Insufficient data to calculate a geometric mean.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Mercury, SSC	Need *E. coli* bacteria to assess FBC.		Lab detection limits for dissolved metals (cadmium, copper, lead, mercury, zinc) were higher than A&Ww chronic criteria in at least 10 samples.
DELIST CADMIUM AND ZINC		Only one exceedance of cadmium criteria in 45 sampling events. No exceedances of total or dissolved zinc in 45 sampling events. Samples were collected at multiple sites and represent various conditions of flow, including runoff events.	
MONITORING RECOMMENDATIONS		Medium Priority – Collect arsenic, mercury and SSC due to exceedances. Collect metals data to determine effectiveness of TMDL implementation strategies, once implemented. Use lower lab detection limits for dissolved metals. Collect arsenic and suspended sediment samples due to the exceedances. Recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted. Collect missing core parameters to represent at least 3 seasons. During the assessment period.	

UNNAMED TRIBUTARY TO LYNX CREEK From headwaters to Lynx Creek 15070102 -- 124 1.0 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Inconclusive FC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 05/11/2001 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Sheldon waste rock MGULN000.75 103428	Weston Inc Special inv for EPA	6 dissolved metal sample at 6 sites: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, manganese, mercury, nickel, silver, thallium, and zinc (All sites sampled once on the same date.)	None	6 Fluoride 6 Total dissolved solids
At Sheldon waste rock MGULN000.70 103429	Weston Inc Special inv for EPA			
Below Sheldon waste rock MGULN000.64 103430	Weston Inc Special inv for EPA			
Upstream of Blue John trib. MGULN000.23 103419	Weston Inc Special inv for EPA			
At Blue John tributary MGULN000.16 103420	Weston Inc Special inv for EPA			
Downstream of Blue John trib MGULN000.11 103421	Weston Inc Special inv for EPA			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Cadmium (dissolved)	19.12 µg/L at >400 mg/L hardness A&Wc acute	05/11/2001 – 135 µg/L	Inconclusive – Only 1 sampling event with an exceedance (5 sites). High magnitude noted.
Cadmium	84 µg/L FC	05/11/2001 – 135 µg/L	Inconclusive – Only 1 sampling event with an exceedance (2 sites). (Binomial)
Copper (dissolved)	49.6 µg/L at >400 mg/L hardness A&Wc acute	05/11/2001 – 22,200 µg/L	Inconclusive – Only 1 sampling event with an exceedance (5 sites). High magnitude noted.
Copper	1300 µg/L FBC	05/11/2001 – 22,200 µg/L (dissolved portion)	Inconclusive – Only 1 sampling event with an exceedance (5 sites). (Binomial)
Zinc (dissolved)	379.3 µg/L at >400 mg/L hardness A&Wc acute	05/11/2001 – 8730 µg/L	Inconclusive – Only 1 sampling event with an exceedance (5 sites). High magnitude noted.

Pollutant: Assume "total" concentration, unless shown as dissolved.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Cadmium, copper, and lead	Insufficient dissolved oxygen and *E. coli* bacteria to assess A&Wc and FBC.		Lab detection limits for selenium and dissolved mercury were higher than A&Wc chronic criteria.
MONITORING RECOMMENDATIONS		Medium Priority –Collect cadmium, copper, and zinc samples due to the exceedances. Use lower lab detection limits for selenium and dissolved mercury. Collect missing core parameters to represent at least 3 seasons.	

Salt Watershed

Watershed Description

This watershed is composed of the Salt River drainage from its headwaters to Granite Reef Dam, excluding the Verde River drainage. This watershed can be divided into four very distinct sub-basins: White River, Black River, Tonto Creek, and the main stem Salt River.

The population of this 6,242 square mile watershed is approximately 40,500 people (2000 census), with most of this population in the Superior-Globe-Miami mining district. Land ownership is approximately: 49% Tribal, 48% federal, 2% private, and 1% state. The principal land uses are open range grazing, recreation, forestry, and mining. Nine wilderness areas have been set aside, which have restricted land uses and activities.

Elevations range from 10,600 feet (above sea level) in the White Mountains, to about 2,000 feet at Granite Reef Dam. The watershed above Roosevelt Lake (White River, Black River, and Tonto Creek) is above 5,000 feet elevation with high desert flora and fauna, and coldwater aquatic communities where perennial waters exist. The area below Roosevelt Lake is below 5,000 feet, and therefore, contains primarily warmwater aquatic communities.

Water Resources

This Watershed receives more precipitation than most of the state, with approximately 20 inches of rain and 20 inches of snowfall. Roosevelt Lake and a chain of other reservoirs (Apache, Canyon, and Saguaro) were constructed to store perennial flow from this watershed and provide much of the water used in the Phoenix metropolitan area.

An estimate of surface water resources in the Salt Watershed is provided in the following table. Waters on Tribal lands are not assessed by ADEQ; therefore, those statistics are shown separately.

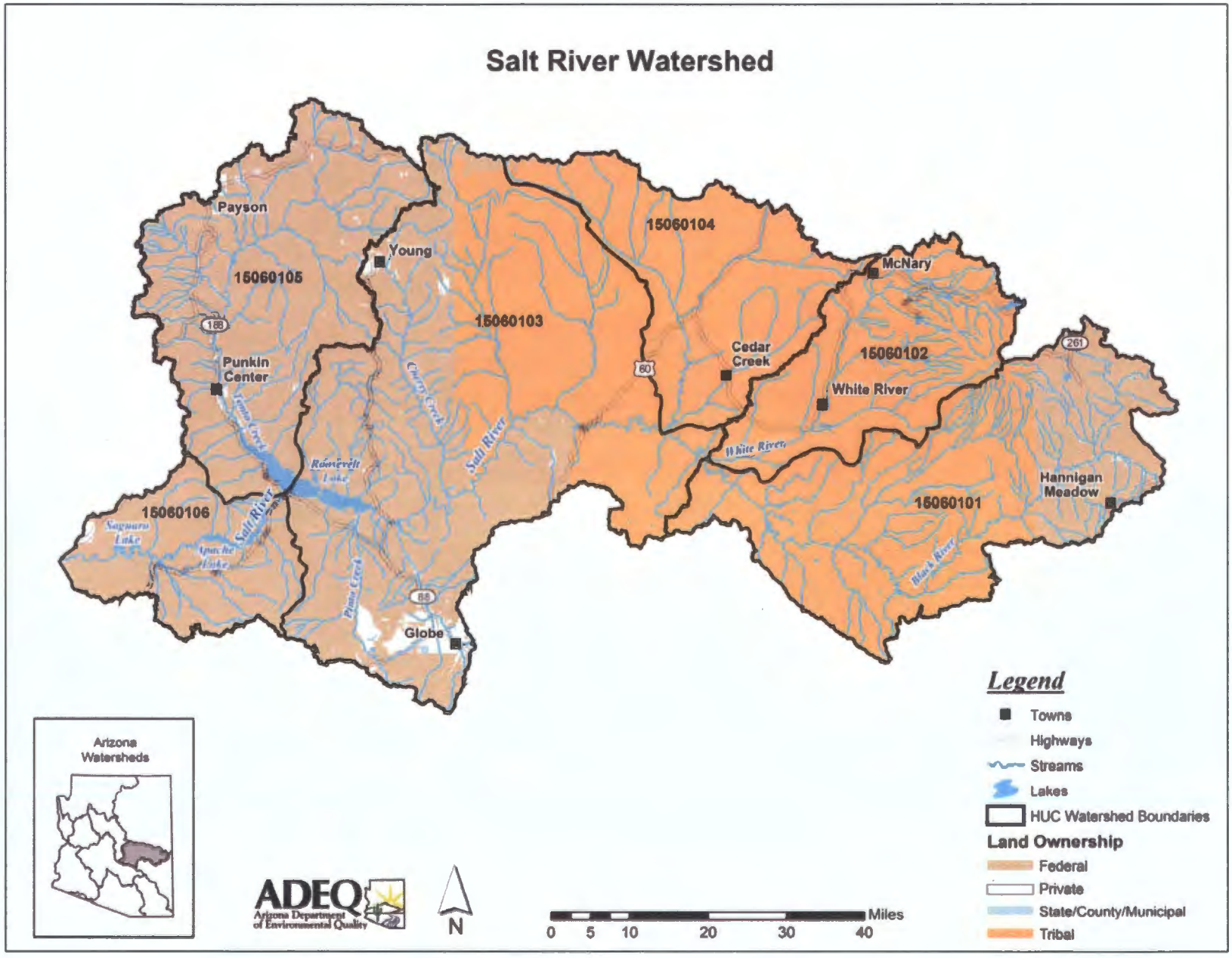
Estimated Surface Water Resources in the Salt Watershed

	Perennial	Intermittent	Ephemeral
Stream miles	510	1,190	2,785
	Perennial	Non-perennial	
Lake acres	25,544	0	

On Tribal Lands – Not Assessed

	Perennial	Intermittent	Ephemeral
Stream miles On Tribal Lands	825	0	4,275
	Perennial	Non-perennial	
Lake acres On Tribal Lands	1,858	0	

Ambient monitoring focuses on perennial waters; however, special investigations may identify water quality problems on intermittent and even ephemeral waters. Estimated miles and acres are based on USGS digitized hydrology at 1:100,000 and have been rounded to the nearest 5 miles or 5 acres.


Salt River Watershed
Payson
Young
15060105
15060104
McNary
15060103
Punkin Center
Cedar Creek
15060102
White River
Tonto Creek
Cherry Creek
Salt River
Roosevelt Lake
White River
Hannigan Meadow
15060106
15060101
Sagauro Lake
Apache Lake
Salt River
Black River
Pinto Creek
Globe
188
60
88
261
Arizona Watersheds
ADEQ
Arizona Department of Environmental Quality
N
0 5 10 20 30 40
Miles
Legend
Towns
Highways
Streams
Lakes
HUC Watershed Boundaries
Land Ownership
Federal
Private
State/County/Municipal
Tribal

Watershed Partnerships

- The Friends of Pinto Creek
  This group is dedicated to the preservation of Pinto Creek and its tributaries, which flow through the copper mining area near Globe. They are dedicated to the preservation of Pinto Creek, Powers Gulch and Haunted Canyon. This group meets as needed. Contact Tom Sonandres at (623) 583-6764 or pintocreek@asu.edu for more information.

- Northern Gila County Water Planning Alliance
  The watershed of interest is bounded by Mogollon Rim to the north, Roosevelt Lake to the south, Sierra Ancha Mountains to the east, and Mazatzal Mountains to the west. The alliance was formed to develop water strategies for the area around Payson, Pine, and Strawberry (a.k.a. Tonto Creek Basin). This group meets as needed. Contact Steve Besich, Assistant County Gila Manager at sbesich@co.gila.za.us; Lionel Martinez, rim Trail Water Improvement District at (928) 474-2029; or Howard Matthews, pine-Strawberry Water Improvement District at (928) 476-2142.

Special Studies and Water Quality Improvement Projects

Total Maximum Daily Load Analyses – The following TMDL analyses have been completed, are ongoing, or are scheduled to be completed in this watershed. Further information about the status of these investigations or a copy of the TMDL, if completed, can be obtained at ADEQ's website: www.azdeq.gov.

- Canyon Lake is impaired by low dissolved oxygen.
  Low dissolved oxygen is generally associated with nutrient loading and eutrophic conditions which can lead to algal blooms and even fish kills. A TMDL is to be initiated in 2010 to determine the cause and controllable sources of the low dissolved oxygen and recommend strategies to meet surface water quality standards.

- Crescent Lake is impaired due to high pH (alkalinity).
  High pH readings are also frequently associated with nutrient loading (see Canyon Creek comments). High pH values may represent concerns for most designated uses, but pose the biggest risk to aquatic life.

- Christopher Creek and Tonto Creek, above Haigler Creek confluence, are impaired by bacteria *Escherichia coli*) contamination.
  Bacteria contamination may pose a risk to humans swimming or even wading in the water. A bacteria TMDL was completed in 2004 for both Christopher Creek and Tonto Creek. Septic and waste disposal systems were identified as the primary source of bacterial loading. The TMDL recommended inspection, repair, and upgrading of these systems, and improving facilities at heavily used recreational sites. The U.S. Forest Service and Gila County Health Department were encouraged to initiate routine bacterial monitoring.

- Tonto Creek, above Haigler Creek confluence, is also impaired by nitrogen (nutrients).
  Excess nitrogen can lead to eutrophic conditions and algal blooms. A nitrogen TMDL was approved in 2005. Three sources of excess nutrients were identified: septic systems, insufficient restroom facilities at recreational sites along Tonto Creek, and the Tonto Creek Fish Hatchery. ADEQ will work with the Arizona Game and Fish Department to determine new permit discharge limits for the hatchery and the means for achieving these limits. Inspection, repair, and upgrading of septic systems, along with improving waste facilities at recreational sites, were also recommended actions so that nutrient standards will be met.

- Pinto Creek is impaired by copper, and the segment of Pinto Creek downstream of Ripper Spring is also impaired by selenium.
  Both copper and selenium concentrations pose a risk to aquatic life and wildlife. Selenium was added on the 2004 Impaired Waters List for the downstream segment of Pinto Creek and a selenium TMDL is scheduled to be initiated in 2009.

The Pinto Creek Phase II TMDL Modeling Report, written by Malcolm Pirnie, Inc. for ADEQ (2006), describes the hydrology and pollutant transport for Pinto Creek basin in support of allocation of copper from discharges to the creek. Natural mineralization in the area has resulted in numerous historic and active mining related disturbances. This model scenario results lead to the following major conclusions:

- Gibson Mine is the single largest source of copper loads to Pinto Creek – over 90% of the copper load. Remediation efforts are necessary at this mining site;
- Remediation at other mining sources is expected to reduce copper;
- Much of upper Pinto Creek would exceed copper criteria even after remediation;
- The Carlotta Copper project (a new mine site being established on Pinto Creek) is not predicted to cause large changes in copper loads or concentrations.

Aggressive remediation activities are being scheduled for the Gibson Mine, an abandoned mine (see Water Quality Improvement Grants below). Site specific standards are also being developed for copper in Pinto Creek because the natural background concentration is higher than the standard in this copper rich mining area.

- The Salt River, from Stewart Mountain Dam (Saguaro Lake) to the Verde River, is impaired by low dissolved oxygen which poses a threat to aquatic life. More data is needed to identify sources and TMDLs have been scheduled to be initiated in 2010.

Water Quality Improvement Grant Projects – ADEQ awarded the following Water Quality Improvement Grants (319 Grants) in this watershed. More information concerning these grants or projects can be obtained at: http://www.azdeq.gov/environ/water/watershed/fin.html.

- **Lower Salt River Pollution Prevention, Education, and Monitoring Project**
  The Tonto National Forest (2000)
  Construct three restrooms in the Salt River Recreational Area and monitor bacteria levels in the segment of stream used for tubing and other recreation.

- **Camp Geronimo Boy Scout Camp On-site Sewer Improvement Project**
  Camp Geronimo Boy Scouts (2002 and 2004)
  Add treatment facilities and provide sealed vault and haul toilet units.

- **Trees for the Rim Project**
  Arizona Community Tree Council (2003)
  Provide trees and other vegetation at no cost to those private property owners whose trees and landscape plants were destroyed during the Rodeo-Chediski fire in 2002. These actions are to help restore vegetation and thereby reduce runoff pollution.

- **Gibson Mine Remediation Project**
  Franciscan Friars of California (2005 and 2006)
  Design, construct, and implement a manmade wetland to reduce copper, beryllium, zinc, and turbidity loadings to Pinto Creek and Mineral Creek.

- **Gila County Septic System Project**
  Gila County Health Department and Community Services (2005 and 2006)
  Identify, repair, upgrade, or replace waste water systems that are structurally unsound or failing in the Christopher Creek and Tonto Creek (headwaters) area. These activities support implementation of the nitrogen and bacteria TMDLs established for these waters.

- **R-Bar-C Boy Scout Camp Sewer Facilities Project**
  Boy Scouts of America – Grand Canyon Council (2006)
  Upgrade septic treatment and disposal facilities to prevent contamination of Christopher Creek.

Water Protection Fund Projects – The following Water Protection Fund Projects were awarded by the Arizona Department of Water Resources. More information about these funds or projects can be obtained from the ADWR web site at: http//www.azwater.gov.

- **Canyon Creek Riparian Restoration Project**
  Arizona Game and Fish Department (2005)
  Temporarily exclude grazing (5 to 10 years) from a half-mile reach of Canyon Creek. The goal of the exclosure is to improve water quality and restore native habitat.

Other Water Quality Studies

- ***Lower Verde / Lower Salt River Management Plan and Restoration Strategy***
  Lower Verde / Lower Salt River Watershed Advisory Group (2000)
  This plan identifies the areas of greatest concern for water resources, initiates pollution source identification, and identifies programs and potential actions to remediate these sources.

- ***Phoenix Metropolitan Reservoir Study***
  David Walker, University of Arizona
  This is an ongoing and comprehensive study of water quality in reservoirs serving the Phoenix metropolitan area. Goal is to collect and analyze data to answer water quality management questions in a proactive manner. A yearly report is produced. In 2005, the report provided information about:
  - Climate and drought effects on water quality,
  - Wildfire effects on water quality,
  - Harmful algal blooms,
  - Atmospheric deposition and the use of sediment to look at accumulation of pollutants, and
  - Endocrine disruption compounds.

- ***Characterization of Hydraulic Conductivity of the Alluvium and Basin Fill, Pinal Creek Basin near Globe, Arizona***
  Cory E. Angeroth – U.S. Geological Survey (2002)
  Mining in the Pinal Creek area has resulted in acidic waters containing elevated concentrations of dissolved metals in the ground water. Slug tests were conducted in 1997 and 1998 to better understand contaminant transport through the regional aquifer (i.e., hydraulic conductivity). The tests showed that in the unconsolidated stream alluvium and in the basin fill, the lower the pH of the ground water, the higher the hydraulic conductivity. Likely, the low pH water is causing the dissolution of aquifer material.

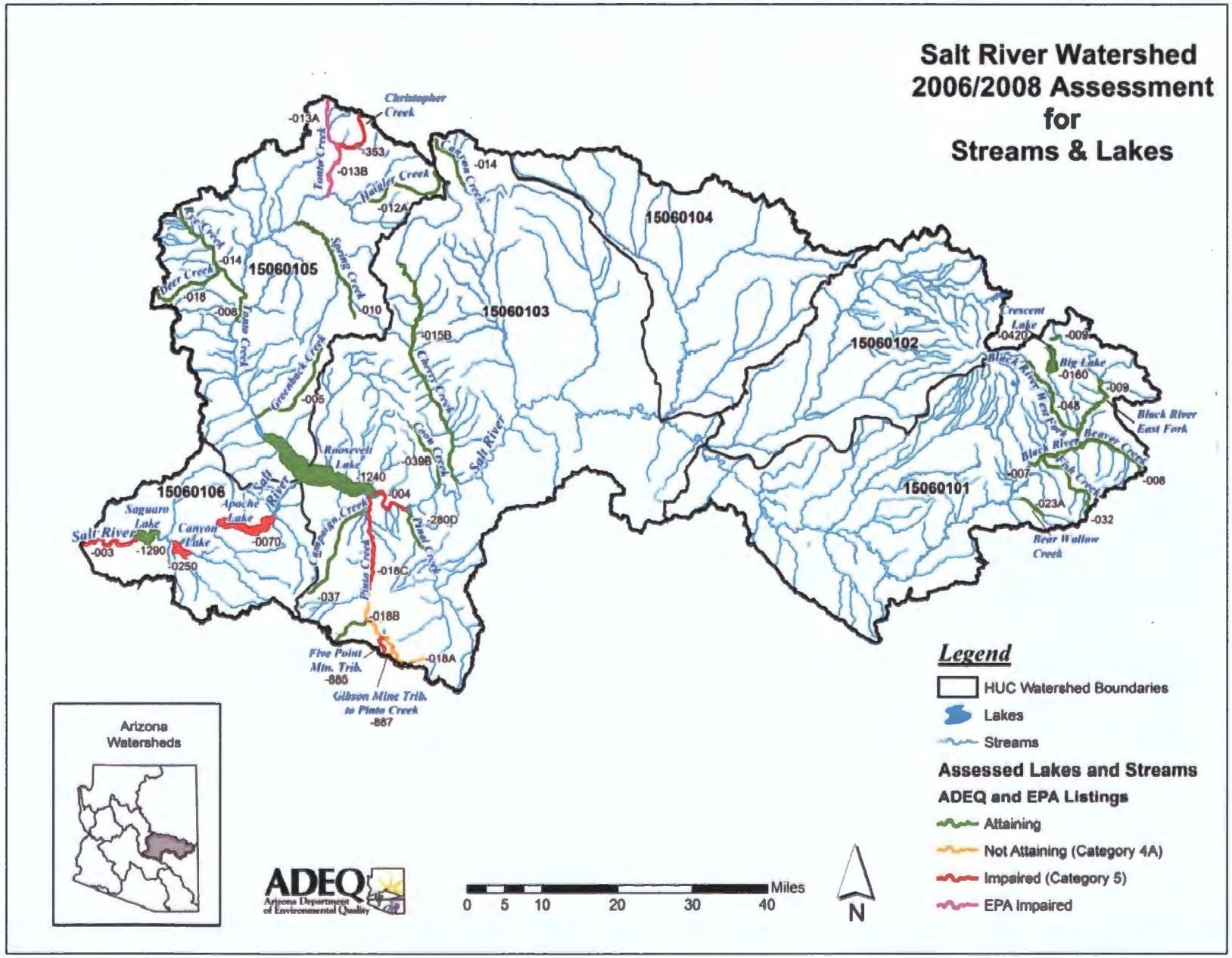
- ***Assessment of Selected Inorganic Constituents in Streams in the Central Arizona Basins Study Area, Arizona and Northern Mexico, through 1998***
  David Anning – U.S. Geological Survey, National Water Quality Assessment Program (2003)
  Inorganic chemical data (dissolved solids, suspended sediment, and nutrients) and stream properties (temperature, pH, dissolved oxygen) were analyzed to assess water quality, determine natural and human factors affecting water quality, and compute stream loads.
  - The total annual input fluxes from quantifiable sources of nitrogen and phosphorus (nutrients) were considerably higher for developed basins than for minimally developed basins (such as the Salt Watershed).
  - For minimally developed basins, precipitation was the largest quantifiable source of nitrogen.
  - The amount of nitrogen and phosphorus transported out of the basins was much smaller than the amount of quantifiable inputs. This indicates that most of the nutrients were not transported out in surface water, but were transported to the subsurface (soil or aquifer), released to the atmosphere (volatilized ammonia), or incorporated into the biomass (plants and animals).

Assessments

The Salt Watershed can be separated into the following drainage areas (subwatersheds):

15060101	Black River
15060102	White River (Tribal land – Not assessed)
15060103	Upper Salt River
15060104	Carrizo Creek (Tribal land – Not assessed)
15060105	Tonto Creek
15060106A	Lower Salt River

These drainage areas and the surface waters assessed as "attaining" or "impaired" are illustrated on the following watershed map. Methods used to complete these assessments are described in the "Surface Water Assessment Methods and Technical Support" document (2006).


Salt River Watershed
2006/2008 Assessment
for
Streams & Lakes
15060101
15060102
15060103
15060104
15060105
15060106
Christopher Creek
-013A
-353
-013B
Haigler Creek
-012A
-014
Tonto Creek
Rye Creek
Deer Creek
-018
-006
Tonto Creek
Spring Creek
-010
Greenback Creek
-005
-015B
Cherry Creek
Coon Creek
Salt River
-039B
Roosevelt Lake
-1240
-004
Salt River
Saguaro Lake
Apache Lake
Canyon Lake
Salt River
-003
-1290
-0250
-0070
Cooper Creek
Pinto Creek
-280D
Pond Creek
-018C
-037
-018B
-018A
Five Point Mtn. Trib.
-869
Gibson Mine Trib. to Pinto Creek
-887
Crescent Lake
-0420
-009
Big Lake
-0160
-009
-048
Black River East Fork
Black River
Beaver Creek
-007
-008
-023A
-032
Bear Wallow Creek
Arizona Watersheds
ADEQ
Arizona Department of Environmental Quality
0 5 10 20 30 40
Miles
N
Legend
HUC Watershed Boundaries
Lakes
Streams
Assessed Lakes and Streams
ADEQ and EPA Listings
Attaining
Not Attaining (Category 4A)
Impaired (Category 5)
EPA Impaired

APACHE LAKE 15060106A-0070 2190 Acres	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Wc – Impaired FBC – Inconclusive FC – Attaining DWS – Attaining AgI – Attaining AgL – Attaining	Category 5 Impaired	Low dissolved oxygen	Add low dissolved oxygen to the 303(d) List

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 10/30/2000 – 11/05/2004		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At dam SRAPA-A 100997	ADEQ, AGFD, UA Ambient	9-14 total and 5 dissolved: Cadmium, chromium, copper, lead, nickel, silver, zinc 6-15 total and 0-2 dissolved: Antimony, arsenic, barium, beryllium, boron, manganese, selenium, mercury, and thallium	42-45 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	11 *E. coli* bacteria 11 Fluoride 14 Total dissolved solids 24 Turbidity
At transition zone SRAPA-B 101712	UA Ambient			
In riverine zone SRAPA-C 102139	ADEQ, AGFD, UA Ambient			
At beach SRAPA-BCH 101704	AGFD, UA Ambient			
At camping area SRAPA-BC 101707	AGFD, UA Ambient			
At Burnt Corral SRAPA-COR 102753	ADEQ, AGFD, UA Ambient			
Mid Lake SRAPA-E 100008	ADEQ, AGFD, UA Ambient			
At marina SRAPA-MAR 100998	AGFD Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	7.0 mg/L A&Wc	SITES 10/30/2000 – 5.1 mg/L – all 09/05/2001 – 2.3 mg/L – C 10/03/2001 – 4.6 mg/L – C 05/30/2001 – 6.2 mg/L – B and C 08/20/2003 – 6.3 mg/L – A 03/10/2004 – 6.4 mg/L – B and C 04/09/2004 – 6.0 mg/L – C 06/01/2004 – 5.1 mg/L – all 11/05/2004 – 2.9 mg/L – all	Impaired – Low dissolved oxygen in the top meter in 16 of 38 samples in the top meter.) (Binomial) Low dissolved oxygen occurred during 9 of 17 monitoring events in the top meter of lake water. (Note: ADEQ has proposed changing the designated use at this lake to A&Ww, which has a dissolved oxygen standard of 6.0 mg/L. This would adjust the number of low dissolved oxygen samples to 8 of 38 samples (5 of 17 sampling events), and it would remain impaired.)

pH (high)	<9.0 SU A&Wc, FBC, DWS, AgI, AgL	08/06/2001 – 9.2 SU 03/07/2003 – 9.4-9.8 SU	Attaining – pH exceeded standards in 2 of 15 sampling events. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	**MISSING CORE PARAMETERS**	**MISSING SEASONAL DISTRIBUTION**	**DETECTION LIMITS NOT LOW ENOUGH**
	Need composite nitrogen and phosphorus samples to assess A&Wc and FBC		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria in at least 7 samples.
DISCUSSION OF SITE SPECIFIC NUTRIENT STANDARDS		Nitrogen and phosphorus standards established for this lake are based on composite samples collected at the surface, 2 meter, and 5 meter depths. No composite samples were collected and analyzed during this assessment period. This standard is to be replaced by the proposed lake narrative nutrient implementation procedures currently being adopted through the Triennial Review process. The nitrogen criterion (1.0 mg/L) was exceeded in 12 of 42 samples collected. However, since these were not composite samples, the standards did not apply.	
MONITORING RECOMMENDATIONS		High Priority –Collect more dissolved oxygen samples to support a TMDL. Low dissolved oxygen and high pH may be symptoms of excess nutrient loading. New methods for implementing the narrative nutrient standard should be applied to this lake once adopted, to determine whether narrative nutrient violations are occurring based on the dissolved oxygen and pH violation, and elevated nutrients. Use lower lab detection limits for selenium and dissolved mercury.	

BEAR WALLOW CREEK	USE SUPPORT	OVERALL ASSESSMENT	
From North and South Forks of Bear Wallow to Indian Reservation boundary 15060101 – 023A 5.9 Miles Unique Water	A&Wc – Attaining FBC – Inconclusive FC – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 10/24/2001 – 08/15/2002 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below South Fork Bear Wallow Creek SRBWL005.79 101198	ADEQ Ambient	3 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, zinc 3 total and 0-1 dissolved: Boron, lead, manganese, mercury 1 total and 1 dissolved: barium, nickel, silver, and thallium	3 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	2 *E. coli* bacteria 3 Fluoride 3 Total dissolved solids 3 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient *E. coli* bacteria samples to assess FBC		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority – Collect *E. coli* bacteria samples to represent at least 3 seasons during the assessment period. Use lower lab detection limits for selenium and dissolved mercury.	

BEAVER CREEK From headwaters to Black River 15060101 -- 008 13.1 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Inconclusive FC – Attaining AgI – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 10/24/2001 – 10/26/2004 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Forest Road #26 SRBEV012.04 102145	ADEQ Special study	3 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, copper, zinc 3 total and 0-1 dissolved: Boron, lead, manganese, mercury 1 total and 1 dissolved: barium, nickel, silver, and thallium	3 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen 7 Phosphorus, dissolved oxygen, pH	3 *E. coli* bacteria 3 Fluoride 7 Total dissolved solids 22 Suspended sediment concentration 22 Turbidity
Above Hannagan Creek SRBEV009.66 102140	ADEQ Special study			
Below Hannagan Creek SRBEV009.56 102139	ADEQ Special study			
Above Forest Road 26 bridge SRBEV007.28 102135	ADEQ Special study			
At USGS Gage near Sprucedale SRBEV001.40 100373	ADEQ Ambient and Special study			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	7.0 mg/L A&Wc	08/13/2002 – 6.74 mg/L 08/28/2003 – 5.56 mg/L	Inconclusive – On 08/13/2002 low dissolved oxygen was naturally occurring due to low flow (flow as 0.13) due to ground water upwelling. Nitrogen was 0.37, phosphorus = 0.18. Other date was during flood flow at 9 cfs, with phosphorus reading at 13 mg/L. (Binomial)
Phosphorus	0.8 mg/L Single sample maximum A&Wc, FBC	08/27/2003 – 13 mg/L	Inconclusive – Only 1 exceedance in 7 samples. (Binomial)
Suspended sediment concentration (SSC)	Geometric mean 80 mg/L A&Wc	08/27/2003 – 4865 mg/L	Attaining – SSC criteria of 80 mg/L was exceeded once in 22 sampling events. Because the sample was collected during flood flows of 9-10 cfs, the value could not be included in the geometric mean calculation. The geometric mean standard was not exceeded. However, the high sediment concentration suggests that sediment may be a problem in this watershed.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	**MISSING CORE PARAMETERS**	**MISSING SEASONAL DISTRIBUTION**	**DETECTION LIMITS NOT LOW ENOUGH**
Phosphorus and dissolved oxygen	Core parameters collected.		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS	Medium Priority –Collect more phosphorus and dissolved oxygen samples due to exceedances. Use lower lab detection limits for selenium and dissolved mercury. Recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted, due to high levels of suspended sediment during flood flows. Note that the old turbidity standard (10 NTU) was exceeded during 8 of 22 sampling events.		

BIG LAKE 15060101 -- 0160 440 Acres	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Inconclusive FC – Attaining DWS – Attaining AgI – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 11/15/2001 – 06/12/2002		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At dam SRBIG-A 101322	ADEQ Ambient	3 dissolved and total metals: Antimony, arsenic, barium, boron, beryllium, chromium, selenium, zinc 3 total and 0-1 dissolved: Cadmium, copper, lead, silver, manganese, mercury	3-4 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	2 *E. coli* bacteria 3 Fluoride 4 Total dissolved solids 3 Turbidity
Mid lake SRBIG-B 101355	ADEQ Ambient			
At boat dock SRBIG-D 100013	ADEQ Ambient			
Shoreline SRBIG-SH 101358	ADEQ Ambient			
West of floating dock SRBIG-SBR 101359	ADEQ Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient *E. coli* bacteria and dissolved cadmium and dissolved copper to assess FBC and A&Wc		Lab detection limits for dissolved metals (cadmium copper, lead, mercury, and silver) were higher than the A&W chronic criteria in at least 1 sample.
MONITORING RECOMMENDATIONS		Low Priority –Collect missing core parameters to represent at least 3 seasons during the assessment period. Use lower lab detection limits for dissolved metals.	

BLACK RIVER From Beaver Creek to Reservation Creek 15060101 – 007 13.1 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Attaining FBC – Inconclusive FC – Attaining DWS – Attaining AgI – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 10/25/2001 – 08/14/2002 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Forest Road #25 SRBLR102.24 101202	ADEQ Ambient	3 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, zinc 3 total 0-1 dissolved: Boron, manganese, lead, mercury 1 total, 1 dissolved Barium, nickel, silver, thallium	3 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	2 *E. coli* bacteria 3 Fluoride 3 Total dissolved solids 3 Suspended sediment concentration 4 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient *E. coli* bacteria sample to assess FBC		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority – Collect *E. coli* bacteria samples to represent at least 3 seasons during the assessment period. Use lower lab detection limits for selenium and dissolved mercury	

CAMPAIGN CREEK From headwaters to Pinto Creek 15060103 -- 037 16.6 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Attaining FBC – Attaining FC – Attaining AgL – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 11/27/2001 – 09/11/2002 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Superstition Wilderness Boundary SRCGN009.78 100431	ADEQ Ambient	4 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, zinc 4 total metals only: Boron, lead, manganese, mercury	4 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	3 *E. coli* bacteria 4 Fluoride 4 Total dissolved solids 4 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Collected all core parameters		Lab detection limit for selenium was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Use lower lab detection limits for selenium.	

CANYON CREEK From headwaters to White Mountain Apache Reservation 15060103 -- 014 8.6 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Attaining FBC – Attaining FC – Attaining DWS – Attaining AgI – Attaining AgL – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 12/18/2001 – 09/06/2002		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below OW Ranch Road SRCYN046.07 100370	ADEQ Ambient	4 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, zinc 4 total metals only: Boron, lead, manganese, mercury	4 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	3 *E. coli* bacteria 4 Fluoride 4 Total dissolved solids 4 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Collected all core parameters		Lab detection limit for selenium was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Use a lower lab detection limit for selenium.	

CANYON LAKE 15060106A -- 0250 450 Acres	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Wc – Impaired FBC – Inconclusive FC – Attaining DWS -- Attaining AgI – Attaining AgL – Attaining	Category 5 Impaired	Low dissolved oxygen	Added low dissolved oxygen to 303(d) List in 2004

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 07/11/2001 – 10/20/2004 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At dam SRCAN-A 101697	ADEQ, AGFD, UA Ambient	7-11 total and 7 dissolved: Cadmium, chromium, copper, lead, nickel, silver, zinc 7 total and 0-2 dissolved: Antimony, arsenic, barium, beryllium, boron, manganese, selenium, mercury, thallium	28-30 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	8 *E. coli* bacteria 16 Fluoride 6 Total dissolved solids 11 Turbidity
At transition zone SRCAN-B 101699	ADEQ, UA Ambient			
Inflow below Horse Mesa Dam SRAPA-1 102538	AGFD Ambient			
Canyon area SRCAN-CAN 102754	AGFD Ambient			
At campground SRCAN-CG1 101700	ADEQ, AGFD, UA Ambient			
At marina SRCAN-MAR 101701	UA Ambient			
Upper middle lake SRCAN-MID 102837	AGFD Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	7.0 mg/L A&Wc	SITES 10/15/2001 – 6.1 mg/L – A and 1 10/18/2002 – 6.7 mg/L – A 06/04/2003 – 4.5 mg/L – A and B 10/15/2003 – 4.4 mg/L – A 01/08/2004 – 5.0 mg/L – A and B 10/20/2004 – 4.2 mg/L – A and B	Impaired – Low dissolved oxygen in 10 of 23 samples in the top meter. (Binomial) Low DO during 6 of 12 sampling events. (Note: ADEQ has proposed changing the designated use at this lake to A&Ww, which has a dissolved oxygen standard of 6.0 mg/L. This would adjust the number of low dissolved oxygen samples to 5 of 23 samples (4 of 12 sampling events), and it would remain impaired.)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	**MISSING CORE PARAMETERS**	**MISSING SEASONAL DISTRIBUTION**	**DETECTION LIMITS NOT LOW ENOUGH**
	Need composite nitrogen and phosphorus samples to assess A&Wc and FBC		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria in at least 2 samples.
DISCUSSION OF SITE SPECIFIC NUTRIENT STANDARDS		Nitrogen and phosphorus standards established for this lake are based on composite samples collected at the surface, 2 meter, and 5 meter depths. No composite samples were collected and analyzed during this assessment period. This standard is to be replaced by the proposed lake narrative nutrient implementation procedures currently being adopted through the Triennial Review process. The nitrogen criterion (1.0 mg/L) was exceeded in 4 of 27 samples collected in the top meter. However, since these were not composite samples, the standard did not apply.	
MONITORING RECOMMENDATIONS		High Priority –Collect more dissolved oxygen samples to support a TMDL. Low dissolved oxygen may be a symptom of excess nutrient loading. New methods for implementing the narrative nutrient standard should be applied to this lake once adopted. Use lower lab detection limits for selenium and dissolved mercury.	

CHERRY CREEK From tributary at 340509 / 110 56004 to Salt River 15060103 -- 015B 40.9 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Attaining FBC – Attaining FC – Attaining AgI -- Attaining AgL – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 11/27/2001 – 09/10/2002		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above road crossing SRCHE032.78 101323	ADEQ Ambient	8 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, zinc 8 total metals only: Boron, lead, manganese, mercury	8 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	7 *E. coli* bacteria 8 Fluoride 8 Total dissolved solids 8 Turbidity
Half-mile above Leisure Canyon SRCHE004.32	ADEQ Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Collected all core parameters		Lab detection limit for selenium was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Use a lower lab detection limit for selenium.	

CHRISTOPHER CREEK From headwaters to Tonto Creek 15060105 – 353 8.0 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Wc – Impaired FBC – Impaired FC – Attaining AgI – Attaining AgL – Attaining	Category 4A (*E. coli*) Not attaining Category 5 (phosphorus) Impaired	*E. coli* bacteria and phosphorus	Add phosphorus. *E. coli* TMDL was approved in 2005. Implementing strategies to reduce loadings.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 05/23/2000 – 10/25/2003 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above recreation area SRCRS006.20 101027	ADEQ TMDL	3-4 total and dissolved metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, zinc 3-4 total metals only: Barium, boron, lead, manganese, mercury 1 total metals only: Nickel, silver, and thallium	95-102 samples: Total nitrogen, total phosphorus, total Kjeldahl nitrogen, dissolved oxygen, pH 4 samples: Ammonia	68 *E. coli* bacteria 4 Fluoride 3 Total dissolved solids 163 Suspended sediment concentration 72 Turbidity
Below recreation area SRCRS005.68 101028	ADEQ TMDL			
Above Highway 260 at Christopher Creek, AZ SRCRS004.43 100362	ADEQ TMDL			
Below Christopher Creek, AZ SRCRS002.97 101030	ADEQ TMDL			
Above Christopher Creek Campground SRCRS002.82 100364	ADEQ TMDL			
Below Christopher Creek Campground SRCRS002.25 100365	ADEQ TMDL			
At top of Box Canyon SRCRS001.24 101033	ADEQ TMDL			
Below Box Canyon SRCRS000.34 100367	ADEQ Ambient			
Above Tonto Creek SRCRS000.08 101034	ADEQ TMDL			

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	7.0 mg/L A&Wc	05/24/2000 – 6.7 mg/L 09/05/2000 – 6.7 mg/L 05/08/2002 – 6.7 mg/L 06/10/2002 – 6.5 mg/L 07/24/2002 – 6.6 mg/L 07/23/2003 – 6.6 mg/L 08/20/2003 – 6.5 mg/L	Attaining –Low dissolved oxygen normally solely due to natural conditions of low flow and ground water upwelling. (Low flows between 0.03 – 0.5 cfs.) Lowest dissolved oxygen measurement was 6.5 mg/L, which is marginally below the standard.
E. coli bacteria	235 CFU/100 ml FBC	09/02/2000 – 689 CFU/100 ml 10/31/2000 – 479 CFU/100 ml 07/22/2003 – 1120 CFU/100 ml 08/20/2003 -- >2419 CFU/100 ml 10/08/2003 – 345 CFU/100 ml	Remains impaired – Exceeded criterion on 5 sampling events during the assessment period. Three exceedances in 2003. Exceedance on one date was associated with flood flows (20 cfs). Exceedances on two other dates were occurred during elevated flows (2-6 cfs).
Phosphorus	0.8 mg/L – Single sample max (SSM) 0.10 mg/L – Annual mean A&Wc and FBC	08/20/2003 – 3.5 mg/L (SSM) 2000 – 0.13 (annual mean) 2003 – 0.44 mg/L (annual mean)	Impaired – Annual mean was exceeded 2 different sites in 2003 and one site in 2000. Single sample maximum (1 mg/L) was exceeded only in 1 of 35 samples (binomial).
Suspended sediment concentration (SSC)	Geometric mean 80 mg/L A&Wc	08/06/2003 – 1603 mg/L 08/20/2003 – 702 mg/L 10/08/2003 – 92 mg/L	Attaining – 3 of 13 sampling events exceeded the 80 mg/L criterion. 1 exceedance occurred during elevated flows (702 mg/L at 5.6 cfs), so was not included in the geometric mean calculation. Using the remaining data, the geometric mean was not exceeded. Note that the old turbidity standard (10 NTU) was also exceeded during 9 sampling events.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Collected all core parameters		Lab detection limit for selenium was higher than A&Wc chronic criteria.
MONITORING RECOMMENDATIONS		Medium Priority –Actions to *E. coli* bacteria loadings will also reduce phosphorus loadings; therefore, development of a phosphorus TMDL is a low priority. Collect additional phosphorus and *E. coli* bacteria data to determine effectiveness of TMDL strategies being implemented. Use a lower lab detection limit for selenium. Recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted.	

COON CREEK From tributary at 334642 / 1105425 to Salt River 15060103 -- 039B 10.1 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Attaining FBC – Attaining FC – Attaining AgL – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 11/27/2001 – 09/10/2002		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Forest Road #203 SRCOO001.92 100379	ADEQ Ambient	4 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, zinc 4 total metals only: Boron, lead, manganese, mercury	4 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	4 *E. coli* bacteria 4 Fluoride 4 Total dissolved solids 4 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Collected all core parameters		Lab detection limit for selenium was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Use a lower lab detection limit for selenium.	

COTTONWOOD GULCH From headwaters to Pinto Creek 15060103 – 891 1.9 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&We – Inconclusive PBC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIODS: 01/10/2000 – 07/16/2002; 04/05/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below Outfall PV004 SRCTG000.39 103443	BHP Permit	9-19 dissolved and total metals: Arsenic, beryllium, cadmium, copper, magnesium, selenium, and zinc.	9 samples: Dissolved oxygen 19 samples: pH	9 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Dissolved lead needed to assess attainment of A&We.		
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least 3 seasons during the assessment period.	

CRESCENT LAKE 15060101 -- 0420 155 Acres	USE SUPPORT		OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	ADEQ	A&Wc – Inconclusive FBC – Inconclusive FC – Attaining AgI – Inconclusive AgL – Inconclusive	Category 2 Attaining Some Uses		
	EPA	A&Wc – Impaired FBC – Impaired AgI – Impaired AgL – Impaired	Category 5 Impaired	High pH	EPA listed lake due to high pH in 2002

Light blue highlights indicate EPA impairments based on EPA assessment and listing criteria. This listing may change when EPA reviews and approves the 2006/2008 impaired waters list. Such listings do not satisfy requirements established in ADEQ's Impaired Water Identification Rule; therefore, they are not included in the list of ADEQ's Impaired waters (Appendix B and Appendix C).

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 11/14/2001 – 06/12/2002 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Mid lake SRCRE-B 100993	ADEQ Ambient	3 dissolved and total metals: Antimony, arsenic, barium, boron, beryllium, chromium, manganese, nickel, silver, selenium, zinc 3 total and 0-2 dissolved: Cadmium, copper, lead, mercury	3 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	3 *E. coli* bacteria 3 Fluoride 4 Total dissolved solids 2 Turbidity
At boat ramp SRCRE-BR 101320	ADEQ Ambient			

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
pH	<9.0 SU A&Wc, FBC, AgI, AgL	11/14/2001 – 9.6 SU	Inconclusive – 1 exceedance in 3 samples. (EPA's original listing considered older data.)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient dissolved cadmium and dissolved copper to assess A&Wc		Lab detection limits for dissolved metals (cadmium, copper, lead, and mercury) were higher than the A&W chronic criteria in at least 1 sample.
DISCUSSION OF HIGH PH IMPAIRMENT		Evidence of potential impairment: • No newer monitoring data since lake was listed as impaired.	
MONITORING RECOMMENDATIONS		High Priority – Collect pH measurements to support development of a TMDL. High pH may be a symptom of excess nutrient loading. New methods for implementing the narrative nutrient standard should be applied to this lake once adopted, to determine whether narrative nutrient violations are occurring. Collect missing core parameters to represent at least 3 seasons. Use lower lab detection limits for dissolved metals.	

DEER CREEK From headwaters to Rye Creek 15060105 -- 018 11.9 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Attaining FBC – Attaining FC – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 01/10/2002 – 04/23/2002		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Mazatzal Wilderness Boundary SRD4E005.86 100531	ADEQ Ambient	3 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, zinc 3 total metals only: Boron, lead, manganese, mercury	3 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	3 *E. coli* bacteria 3 Fluoride 3 Total dissolved solids 3 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Collected all core parameters		Lab detection limits for selenium was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Use a lower lab detection limit for selenium.	

EAST FORK BLACK RIVER	USE SUPPORT	OVERALL ASSESSMENT	
From headwaters to Black River 15060101 -- 009 26.7 Miles	A&Wc – Attaining FBC – Attaining FC – Attaining DWS – Attaining Agl – Attaining AgL – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 10/24/2001 – 11/19/2003 NUMBER AND TYPES OF SAMPLES Metals	Nutrients – Related	Other
Below the three Black River forks SREFB011.86 101203	ADEQ Special study	8 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, copper, zinc 8 total and 0-2 dissolved: Boron, lead, manganese, mercury 2 total and 2 dissolved: barium, nickel, silver, and thallium	8 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	8 *E. coli* bacteria 8 Fluoride 8 Total dissolved solids 4 Suspended sediment concentration 12 Turbidity
Above old Buffalo Crossing bridge SREFB000.91 100375	ADEQ Special study			
Below Forest Road 24 at USGS gage SREFB000.62 102131	ADEQ Special study			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Core parameters collected.		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Use lower lab detection limits for selenium and dissolved mercury.	

ELLIS RANCH TRIBUTARY From headwaters to Pinto Creek 15060103 – 888 1 Mile	USE SUPPORT	OVERALL ASSESSMENT	
	A&We –Inconclusive PBC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 03/05/2004 – 01/12/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Forest Road #349 SRERT000.48 102647	ADEQ TMDL	27 dissolved and 5 total: Copper 5 total and 5 dissolved: Selenium and zinc		
At Forest Road #349 SRERT000.10 102648	ADEQ TMDL	4 pH		

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (dissolved)	5.8 µg/L at 23 mg/L hardness 5.8 µg/L at 23 mg/L hardness 7.5 µg/L at 30 mg/L hardness A&We acute	12/29/2004 – 36 µg/L 01/04/2005 – 67 µg/L 01/12/2005 – 37 µg/L	Inconclusive –Field investigations for the Pinto Creek TMDL have concluded that copper loads are due to a combination of natural background conditions, as well as abandoned mines in the sub-watershed. Further monitoring is needed in order to determine natural background levels.
Low pH	<6.5 SU A&We, PBC	03/05/2004 – 6.1 SU	Inconclusive – Did not meet standards in 1 of 4 samples. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
pH	Missing most core parameters	Insufficient sampling events	Lab detection limits for selenium was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Medium Priority – Collect pH measurements due to the low pH value. Collect missing core parameters to represent at least 3 seasons during an assessment period. Use lower detection limits for selenium and dissolved mercury.	

FISH CREEK From headwaters to Black River 15060101 – 032 13.8 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Attaining FBC – Inconclusive FC – Attaining AgI – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 10/25/2001 – 08/14/2002 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Black River SRFIS000.01 101200	ADEQ Ambient	3 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, zinc 3 total and 0-1 dissolved: Boron, lead, manganese, mercury 1 total and 1 dissolved: barium, nickel, silver, and thallium	3 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	2 *E. coli* bacteria 3 Fluoride 3 Total dissolved solids 3 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient *E. coli* bacteria samples		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority – Collect *E. coli* bacteria samples to represent at least 3 seasons during the assessment period. Use lower lab detection limits for selenium and dissolved mercury.	

FIVE POINT MOUNTAIN TRIBUTARY From headwaters to Pinto Creek 15060103 – 885 2.9 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&We – Impaired PBC – Inconclusive	Category 5 Impaired	Copper	Add copper to 303(d) List. (see discussion below)

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 03/30/2001 – 01/04/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At 60W3 ** SRFPM002.24 102657	ADEQ TMDL	6 total and dissolved: Copper 5 total and dissolved: Selenium, and zinc 1 dissolved and total metals: Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, lead, manganese, mercury, nickel, silver, thallium 6 pH	None	1 Fluoride
Below unnamed mine SRFPM001.69 102658	ADEQ TMDL			
Above Bronx Mine SRFPM000.99 102659	ADEQ TMDL			
Below Bronx Mine SRFPM000.90 102660	ADEQ TMDL			

** 60W3 was a natural background site located above any mining or other anthropogenic disturbances.

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (dissolved)	12.5 µg/L at 52 mg/L hardness 7.0 µg/L at 28 mg/L hardness 8.6 µg/L at 35 mg/L hardness 7.7 µg/L at 31 mg/L hardness 5.6 µg/L at 22 mg/L hardness 4.4 µg/L at 17 mg/L hardness A&We acute	03/30/2001 – 380 µg/L 02/26/2003 – 45 µg/L 03/04/2003 – 100 µg/L (02/23/2004 – 62 µg/L)* (12/29/2004 – 72 µg/L)* (01/04/2005 – 46 µg/L)*	Impaired – 3 exceedances within a 3-year period. *These exceedances occurred at the natural background site, and were not used in determining impairment.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Collected all core parameters		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
DISCUSSION OF EXCEEDANCES		Samples were collected to support the Pinto Creek copper TMDL and site specific copper standard development. Copper loadings from this tributary will be addressed in the Pinto Creek copper TMDL currently being developed.	
MONITORING RECOMMENDATIONS		High Priority –Collect additional samples to support TMDL development as needed. Use lower detection limits for selenium and dissolved mercury.	

GIBSON MINE TRIBUTARY From headwaters to Pinto Creek 15060103 – 887 1 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Ww – Impaired FBC – Inconclusive FC -- Inconclusive	Category 4A Not Attaining	Copper	Currently undergoing a Phase II copper TMDL.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 10/22/2000 – 03/05/2004 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Pinto Creek SRGIB000.11 101071	ADEQ TMDL	31-50 dissolved and total metals: Copper and zinc 1 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, lead, manganese, mercury, nickel, silver, thallium	4 samples: Dissolved oxygen 17 pH	1 Fluoride 1 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (dissolved)	4.9 µg/L at 34 mg/L hardness 9.1 µg/L at 66 mg/L hardness 9.3 µg/L at 68 mg/L hardness 78 µg/L at 56 mg/L hardness 12.2 µg/L at 90 mg/L hardness 14.7 µg/L at 110 mg/L hardness 5.5 µg/L at 39 mg/L hardness 6.6 µg/L at 47 mg/L hardness 15.4 µg/L at 140 mg/L hardness 7.5 µg/L at 54 mg/L hardness A&Ww acute	03/05/2004 – 2,400 µg/L 08/26/2003 – 4,200 µg/L 03/04/2003 – 7,000 µg/L 02/27/2003 – 7,400 µg/L 02/15/2003 – 6,000 µg/L 03/30/2001 – 2,300 µg/L 03/08/2001 – 2,100 µg/L 02/16/2001 – 2,500 µg/L 01/12/2001 – 5,600 µg/L 10/22/2000 – 5,900 µg/L	Impaired – Exceeded standards during all 10 monitoring periods – 9 exceedances in the last 3 years of monitoring.
Low pH	<6.5 SU A&Ww, FBC	03/05/2004 – 6.0 SU 08/26/2003 – 5.7 SU 03/04/2003 – 6.2 SU 02/27/2003 – 6.0 SU 02/15/2003 – 5.7 SU 03/08/2001 – 6.4 SU 01/12/2001 – 5.9 SU 10/22/2000 – 5.4 SU	Inconclusive – Did not meet standards in 8 of 10 sampling events (13 of 17 samples). Binomial method requires a minimum of 5 exceedances and 20 samples to list as impaired. (See discussion below)

Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
pH	Missing most core parameters		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
DISCUSSION OF EXCEEDANCES		Gibson Mine tributary is heavily impacted by mining activities; however, remediation activities are currently trying to address this contamination. Copper loadings from this tributary will be addressed in the Pinto Creek copper TMDL currently being developed.	
MONITORING RECOMMENDATIONS		High Priority –Collect additional samples to support TMDL development as needed. Use lower detection limits for selenium and dissolved mercury.	

GOLD GULCH From headwaters to Pinto Creek 15060103 – 894 3.3 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&We – Inconclusive PBC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIODS: 01/06/2000 – 04/03/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
North of #3 tailing impoundment SRGDG000.21 103442	BHP Permit	33 total and 3 dissolved metals: Copper, selenium, zinc 23-33 total metals only: Arsenic, beryllium, cadmium, and magnesium	21 samples: Dissolved oxygen 42 samples: pH	30 Turbidity
At weir SRGDG000.03 102666	BHP Permit			

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Need dissolved lead to assess A&We.		Lab detection limit for selenium was higher than A&W chronic criteria.
DISCUSSION OF EXCEEDANCES		Samples were collected to support the Pinto Creek copper TMDL and site specific copper standard development. Copper loadings from this tributary will be addressed in the Pinto Creek copper TMDL currently being developed.	
MONITORING RECOMMENDATIONS		High Priority –Collect additional samples to support TMDL development as needed. Collect missing core parameters to represent at least 3 seasons during the assessment period. Use a lower detection limits for selenium.	

GREENBACK CREEK From headwaters to Tonto Creek 15060105 -- 005 16.4 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Attaining FBC – Attaining FC – Attaining AgL – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 11/28/2001 – 05/08/2002		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below Conway Ranch SRGRE009.81 101221	ADEQ Ambient	3 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, copper, zinc 3 total and 0-2 dissolved: Boron, lead, manganese, mercury	3 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	3 *E. coli* bacteria 3 Fluoride 3 Total dissolved solids 3 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Core parameters collected.		Lab detection limit for selenium was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Use a lower lab detection limit for selenium.	

HAIGLER CREEK From headwaters to unnamed tributary at 341223 / 1110011 15060105 – 012A 15.4 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Attaining FBC – Attaining FC – Attaining AgI – Attaining AgL – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 12/18/2001 – 08/29/2002		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Near Boy Scout Camp SRHAG009.01 100372	ADEQ Ambient	4 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, zinc 4 total metals only: Boron, lead, manganese, mercury	4 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	3 *E. coli* bacteria 4 Fluoride 4 Total dissolved solids 4 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Core parameters collected.		Lab detection limit for selenium was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Use a lower lab detection limit for selenium.	

HANNAGAN CREEK	USE SUPPORT	OVERALL ASSESSMENT	
From headwaters to Beaver Creek 15060101 -- 034 7.2 Miles	A&Wc – Inconclusive FBC – Inconclusive FC – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 04/09/2002 – 03/23/2004		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Highway 181 SRHAN002.27 102149	ADEQ Ambient		5-7 samples: Total phosphorus, dissolved oxygen, pH	7 Total dissolved solids 4 Suspended sediment concentration 4 Turbidity
Above Beaver Creek SRHAN000.06 102141	ADEQ Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	7.0 mg/L A&Wc	06/20/2003 – 6.2 mg/L	Attaining -- Low dissolved oxygen due to natural conditions of low flow and ground water upwelling. Flow at 0.05 cfs. Nutrient tested showed low concentration (phosphorus 0.068 mg/L).
Phosphorus	0.8 mg/L Single sample maximum A&Wc, FBC	08/27/2003 – 6.2 mg/L	Inconclusive – Only 1 exceedance in 7 samples. (Binomial) Occurred during very high flow (10.3 cfs)
Suspended sediment concentration	Geometric mean 80 mg/L A&Wc	08/27/2003 – 3,500 mg/L 03/10/2004 – 95 mg/L 03/23/2004 – 135 mg/L	Attaining – Exceeded 80 mg/L on 3 of 7 monitoring events. Two of the results were not included in the geometric mean calculation, because flows were elevated (3,500 mg/L and 135 mg/L). Using the remaining samples, the geometric mean standard was not exceeded.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Phosphorus	Insufficient core parameters		
MONITORING RECOMMENDATIONS		Medium Priority –Collect more phosphorus and suspended sediment concentration data due to exceedances. Recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted, due to high levels of suspended sediment during flood flows. Collect core parameters to represent at least 3 seasons during the assessment period.	

HAUNTED CANYON From headwaters to Pinto Creek 15060103 – 879 6.8 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Attaining FC – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 03/23/2000 – 01/14/2005 NUMBER AND TYPES OF SAMPLES Metals	Nutrients – Related	Other
Below Powers Gulch SRHNC000.45 101131	ADEQ Ambient And TMDL	19 total and 61 dissolved: Copper 3-15 total and dissolved: Antimony, arsenic, barium, beryllium, cadmium, chromium, lead, nickel, selenium, silver, thallium, zinc 8 total and 0-2 dissolved: Boron, manganese, mercury	5-7 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus 10 Dissolved oxygen, 26 pH	4 *E. coli* bacteria 9 Fluoride 5 Total dissolved solids 6 Turbidity
At Carlota Weir SRHNC000.14 101072	ADEQ TMDL			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (dissolved)	7.6 µg/L at 55 mg/L hardness 13.2 µg/L at 98 mg/L hardness A&Ww acute	12/30/2004 – 22 µg/L 03/10/2004 – 17 µg/L	Inconclusive – ADEQ will collect further monitoring because weight-of-evidence does not support listing this reach as impaired. (See discussion below)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Collected all core parameters		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.

DISCUSSION OF COPPER EXCEEDANCES	The assessment is supported by the following evidence: 1. The exceedances are based on calculated hardness. Allowing for a margin of error in the analysis, the acute copper criteria on 03/10/2004 could be as high as 17 µg/L, which would not be an exceedance. 2. Both exceedances occurred at the Carlota Weir; however, all five samples collected 3/10 mile upstream (below Power Gulch) were below the lab reporting limit of 10 µg/L. A rich copper ore body is known to exist near the lower site where the exceedances occurred; therefore the exceedances may be due to natural conditions (not a violation of standards). The sample on 03/10/2004 was collected during low flow (less than 1 cfs), which further supports the proposal that it represented natural background for this site.
MONITORING RECOMMENDATIONS	Medium Priority – Collect copper data to support Phase II copper TMDL. Use lower lab detection limits for selenium and dissolved mercury.

HAY CREEK	USE SUPPORT	OVERALL ASSESSMENT	
From headwaters to West Fork Black River 15060101 – 353 4.5 Miles Unique Water	A&Wc – Inconclusive FBC – Inconclusive FC – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 11/15/2001-05/05/2004		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
In Exclusion area SRHAY003.25 102121	ADEQ Special study	2 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, zinc 2 total and 0-1 dissolved: Boron, lead, manganese, mercury	2 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	1 *E. coli* bacteria 2 Fluoride 2 Total dissolved solids 8 Suspended sediment concentration 8 Turbidity
Above West Fork Black River SRHAY000.04 101299	ADEQ Ambient and Special Study			

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	Lab detection limit for selenium is higher than A&Wc chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least 3 seasons during the assessment period. Use a lower lab detection limit for selenium.	

HOME CREEK From headwaters to West Fork Black River 15060101 – 339 9.1 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Inconclusive FC – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 04/16/2003 – 03/23/2004		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above fish barrier SRHOM001.01 102128	ADEQ Special study		1 sample: Total phosphorus, 4 samples: Dissolved oxygen and pH	2 Total dissolved solids 6 Suspended sediment concentration 6 Turbidity
Above West Fork Black River SRHOM000.02 102129	ADEQ Special study			

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least 3 seasons during the assessment period.	

HORTON CREEK From headwaters to Beaver Creek 15060101 -- 036 4.6 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Inconclusive FC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 04/15/2003 – 03/23/2004		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Forest Road #26 SRHRT002.27 102149	ADEQ Ambient		2 samples: Total phosphorus, dissolved oxygen, pH	1 Total dissolved solids 3 Suspended sediment concentration 3 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least 3 seasons during the assessment period.	

JK MOUNTAIN TRIBUTARY From headwaters to West Fork Pinto Creek 15060103 – 873 1.1 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&We – Inconclusive PBC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 03/05/2004; 01/04/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above West Fork Pinto Creek SRJKM000.22 102668	ADEQ TMDL	2 dissolved and total metals: Copper, selenium, zinc 2 pH		

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (dissolved)	9.1 µg/L at 37 mg/L hardness 13.9 µg/L at 58 mg/L hardness A&We acute	01/04/2005 – 18 µg/L 03/05/2004 – 28 µg/L	Attaining –Field investigations for the Pinto Creek TMDL have concluded that copper loads are entirely due to natural background conditions. Exceedances entirely due to natural background are not violations of copper criteria and are not used to list a surface water as impaired. This data was used to develop a site-specific standard for Pinto Creek.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameter	Insufficient sampling events	Lab detection limit for selenium was higher than A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least 3 seasons during an assessment period. Use lower detection limits for selenium.	

MEAD CANYON From headwaters to Pinto Creek 15060103 – 889 2.4 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&We – Inconclusive PBC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATES: 03/05/2004; 12/30/2004		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below MF Ranch SRMEC001.13 102655	ADEQ TMDL	2 dissolved and total metals: Copper and zinc 2 pH		
At Forest Road #349 SRMEC000.53 102656	ADEQ TMDL			

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (dissolved)	14.2 µg/L at 59 mg/L hardness 9.3 µg/L at 38 mg/L hardness A&We acute	03/05/2004 – 22 µg/L 12/30/2004 – 67 µg/L	Attaining –Field investigations for the Pinto Creek TMDL have concluded that copper loads are entirely due to natural background conditions. Exceedances entirely due to natural background are not violations of copper criteria and are not used to list a surface water as impaired. This data was used to develop a site-specific standard for Pinto Creek.
Low pH	>6.5 SU A&We, PBC	03/05/2004 – 5.3 SU	Inconclusive – Did not meet standards in 1 of 2 sampling events. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
pH	Insufficient core parameters	Insufficient sampling events	Lab detection limit for selenium was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Medium Priority –Collect pH samples due to the low pH value. Collect core parameters to represent at least 3 seasons during an assessment period. Use a lower detection limit for selenium.	

NORTH FORK BEAR WALLOW CREEK From headwaters to Bear Wallow Creek 15060101 – 022 5.2 Miles Unique Water	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Inconclusive FC – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATES: 11/14/2001; 06/11/2002 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Just above South Fork Bear Wallow Creek SRNBE000.10 101262	ADEQ Ambient	2 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, lead, manganese, mercury, zinc 2 total and 0-1 dissolved: Boron, lead, manganese, mercury	2 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	2 *E. coli* bacteria 2 Fluoride 2 Total dissolved solids 2 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameter	Insufficient sampling events	Lab detection limit for selenium was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least 3 seasons during the assessment period. Use a lower lab detection limit for the selenium.	

PINAL CREEK From Lower Pinal Creek WTP discharge to Salt River 15060103 – 280D 6.4 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Attaining FC – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 02/16/2000 – 04/28/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Setka Ranch SRPNL006.87 101491	USGS Pinal Group Effectiveness	93-173 total and dissolved metals: Beryllium, cadmium, chromium, copper, manganese, nickel, zinc 25-60 total and dissolved metals: Antimony, arsenic, barium, boron, lead, thallium, 17-25 total and dissolved: Selenium, silver 25 total and 4 dissolved: Mercury	22 samples: Ammonia, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen 109 Dissolved oxygen 273 pH	22 *E. coli* bacteria 11 Fluoride 8 Total dissolved solids 22 Suspended sediment concentration 22 Turbidity
At site Z2.2 SRPNL006.70 101503	USGS Special study			
At site Z4 SRPNL006.62 101504	USGS Special study			
At site Z4.3 SRPNL006.54 101505	USGS Special study			
At site Z4.7 SRPNL006.49 101507	USGS Special study			
At site Z5 SRPNL006.41 101509	USGS Special study			
At site Z5.7 SRPNL006.24 101510	USGS Special study			
At site Z6.2 SRPNL006.17 101511	USGS Special study			
At site Z7 SRPNL005.96 101513	USGS Special study			
At USGS site SRPNL005.82 101515	USGS Special study			
At size Z9A SRPNL005.65 101516	USGS Special study			
At site Z10SW SRPNL005.51 102171	USGS Special study			
At site JJ15 SRPNL005.12 101518	USGS Pinal Group Effectiveness			
At Inspiration Dam SRPNL003.79 100727	USGS Pinal Group Effectiveness			

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Excluded metals exceedances and low pH values before treatment initiated in 2001			
Cadmium (dissolved)	6.22 µg/L at >400 mg/L hardness A&Ww chronic	07/14/2004 – 7.0 µg/L	Inconclusive – One exceedance the assessment period. Occurred during normal flow.
Chromium	100 µg/L FBC	12/08/2004 – 140	Attaining – Only 1 exceedance in 70 samples (Binomial)
Dissolved oxygen	6.0 mg/L A&Ww	06/13/2000 – 4.7 mg/L 08/20/2000 – 5.5 mg/L 10/17/2000 – 5.5 mg/L 01/25/2001 – 4.8 mg/L 04/05/2001 – 1.7 mg/L 06/12/2001 – 5.5 mg/L 08/07/2001 – 3.8 mg/L 01/16/2002 – 5.4 mg/L 05/27/2003 – 4.0 mg/L 05/18/2004 – 5.4 mg/L	Attaining -- Low dissolved oxygen due to natural conditions of ground water upwelling in the area.
pH	>6.5 SU A&Ww, FBC, AgL	05/27/2003 – 6.4 SU	Attaining – Surface water treatment in 2001. Only 1 low pH in 63 monitoring events. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Dissolved cadmium	Collected all core parameters		Lab detection limits for dissolved metals (beryllium, cadmium, chromium, copper, mercury, nickel, silver, and zinc) and selenium were higher than A&W criteria in at least 6 samples.
MONITORING RECOMMENDATIONS		Medium Priority –Collect additional dissolved cadmium and dissolved zinc samples due to exceedances. Use lower lab detection limits for dissolved metals and total selenium.	

PINTO CREEK From headwaters to unnamed tributary at 331927 / 1105456 15060103 – 018A 2.5 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Ww – Impaired FBC – Inconclusive FC – Inconclusive AgI – Inconclusive AgL – Inconclusive	Category 4A Not Attaining	Copper	Currently undergoing a Phase II copper TMDL.

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 02/16/2001 – 03/05/2004		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Simpson Dam SRPNT033.02 102428	ADEQ Ambient	7 dissolved and 6 total copper 2 total and 3 dissolved zinc 7 pH	2 samples: Dissolved oxygen and pH	

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper	500 µg/L AgL	08/26/2003 – 1300 µg/L 03/05/2004 – 1000 µg/L	Remains impaired – 2 exceedances in 6 samples.
Copper (dissolved)	5.7 µg/L at 40 mg/L hardness 16.0 µg/L at 120 mg/L hardness A&Ww acute	02/27/2003 – 16 µg/L 03/05/2004 – 18 µg/L	Remains impaired – 2 exceedances in the last 3 years of monitoring
pH	>6.5 µg/L A&Ww, FBC, AgL	08/26/2003 – 5.9 µg/L 03/05/2004 – 5.7 µg/L	Inconclusive – Only 2 exceedances in 6 sampling events. (Binomial method requires a minimum of 5 exceedances and 20 samples to assess as impaired.)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
pH	Insufficient core parameters		Lab detection limit for selenium was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		High Priority –Collect copper samples to support development of the Phase II copper TMDL and site specific copper standards. Collect additional pH samples due to exceedances. Use a lower lab detection limit for selenium.	

PINTO CREEK From unnamed tributary at 331927 / 1105456 to West Fork Pinto Creek 15060103 – 018B 15.3 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Ww – Impaired FBC – Attaining FC – Attaining AgI – Attaining AgL – Attaining	Category 4A Not Attaining	Copper	Currently undergoing a Phase II copper TMDL.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 02/16/2000 – 04/28/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Henderson Ranch Mines SRPNT032.25 101039	ADEQ TMDL	96 total and 80 dissolved: Copper 58 total and 38 dissolved: Zinc 33 total and 8 dissolved: Arsenic, beryllium, cadmium, manganese. 26 total metals only: Selenium 8-9 dissolved and total metals: Antimony, barium, boron, chromium, lead, nickel, silver, thallium 8 total metals only: Mercury 112 pH		9 Fluoride 7 Turbidity
At Henderson Ranch Mines SRPNT031.89 102429	ADEQ TMDL			
Below Henderson Ranch Mines SRPNT031.74 101061	ADEQ TMDL			
Above Gibson Mine tributary SRPNT028.85 101062	ADEQ TMDL			
At old Highway 60 SRPNT027.51 101064	ADEQ TMDL			
Above Cottonwood Gulch and below Cactus Breccia SRPNT024.85 103311	ADEQ TMDL And BHP Effectiveness			
Above Carlotta Cactus Breccia SRPNT024.04 102430	ADEQ TMDL And BHP Effectiveness			
Below Carlotta Cactus Breccia SRPNT023.29 102431	ADEQ TMDL			
Below Haunted Canyon USGS # 09498501 SRPNT020.12 101068	ADEQ TMDL			
Below USGS gage SRPNT019.77 102432	ADEQ TMDL			
Below Iron Bridge SRPNT019.23 103313	BHP Effectiveness			

EXCEEDANCES			
POLLUTANT	**STANDARD UNIT DESIGNATED USES**	**DATES EXCEEDANCES**	**DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS**
Copper	500 µg/L – AgL 1300 µg/L -- FBC	10/23/2000 – 810 µg/L 02/25/2003 – 1172 µg/L 08/26/2003 – 1600 µg/L 03/05/2004 – 1700 µg/L 12/29/2004 – 1600 µg/L	Remains impaired – 3-5 exceedances in 28 sampling events (3-6 of 96 samples). (Binomial method requires a minimum of 10 samples with no exceedances.)
Copper (dissolved)	Varies by hardness between 2.7 to 49.6 µg/L) A&Ww acute	10/23/2000 – 920 µg/L 01/13/2001 – 150 µg/L 02/16/2001 – 210 µg/L 03/06/2001 – 260 µg/L 03/30/2001 – 81 µg/L 02/13/2003 – 530 µg/L 02/25/2003 – 820 µg/L 03/04/2003 – 480 µg/L 03/17/2003 – 340 µg/L 04/21/2003 – 70 µg/L 08/26/2003 – 230 µg/L 02/23/2004 – 93 µg/L 03/05/2004 – 450 µg/L 12/29/2004 – 83 µg/L 01/04/2005 – 77 µg/L	Remains impaired – 15 exceedances in 15 sampling events.
pH	<6.5 SU A&Ww FBC AgL	10/23/2000 – 5.6 SU 02/15/2003 – 5.7 SU 08/26/2003 – 5.9 SU 03/05/2004 – 5.7 SU	Attaining– Only 4 exceedances in 28 sampling events (Binomial method requires a minimum of 6 exceedances in 28 samples.)
Selenium	2.0 µg/L A&Ww chronic	04/22/2003 – 3 µg/L 02/03/2004 – 3 µg/L* 10/18/2004 – 3 µg/L*	Inconclusive – 1 exceedances during the assessment period. *Exceedances may be due to groundwater upwelling.
Zinc (dissolved)	232 µg/L at 224 mg/L hardness 379.3 µg/L at >400 µg/L hardness	10/23/2000 – 390 µg/L 08/26/2003 – 5,100 µg/L	Inconclusive – 2 exceedances; however, exceedances occurred more than 3 years apart. (A minimum of 2 exceedances in a 3-year period are required to determine impairment.)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	**MISSING CORE PARAMETERS**	**MISSING SEASONAL DISTRIBUTION**	**DETECTION LIMITS NOT LOW ENOUGH**
Selenium, dissolved zinc	Insufficient *E. coli* bacteria, total nitrogen, and total phosphorus to assess FBC and A&Ww		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		High Priority –Collect copper samples to support development of the Phase II copper TMDL and site specific copper standards. Collect additional selenium and dissolved zinc samples due to exceedances. Use lower lab detection limits for selenium and dissolved mercury. The old turbidity criterion (50 NTU) was exceeded in 7 of 39 samples. Collect suspended sediment concentration (SSC) samples. Also, recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted.	

PINTO CREEK From West Fork Pinto Creek to Roosevelt Lake 15060103 – 018C 17.8 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Ww – Impaired FBC – Impaired FC – Attaining AgI – Attaining AgL – Impaired	Category 5 (Selenium) Impaired Category 4A (Copper) Not Attaining	Copper, selenium	Added selenium in 2004. Currently undergoing a Phase II copper TMDL.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 01/31/2000 – 01/11/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Pinto Valley Weir SRPNT014.93 102436	ADEQ TMDL	31 total and 35 dissolved: Copper 26 total and 25 dissolved: Zinc 22-23 total and dissolved: Antimony, arsenic, beryllium, cadmium, chromium, lead manganese. 9-10 dissolved and total metals: Barium, nickel, silver, thallium 22-23 total and 0-2 dissolved: Boron, manganese, 22 total 4 dissolved: Mercury 1-2 total and dissolved: Selenium	20-21 samples: Ammonia, nitrate-nitrite, total nitrogen, total phosphorus. 24 samples: Dissolved oxygen 33 samples: pH	19 *E. coli* bacteria 23 Fluoride 20 Total dissolved solids 10 Suspended sediment concentration 21 Turbidity
At Pinto Valley Weir USGS #09498502 SRPNT014.51 101070	ADEQ TMDL			
Above Henderson Ford SRPNT008.48 100346	ADEQ TMDL			
At State Route 188 SRPNT004.37 102437	ADEQ TMDL			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Cadmium	50 µg/L for AgI, AgL 84 µg/L for FC	04/27/2004 – 200 µg/L	Attaining – 1 exceedance in 23 samples. (Binomial)
Copper (dissolved)	20.9 µg/L at 160 mg/L hardness 22.2 µg/L at 170 mg/L hardness A&Ww acute	03/05/2004 – 27 µg/L 01/05/2005 – 32 µg/L	Remains impaired – 2 exceedances in the last 3 years of monitoring. (Chronic criteria also exceeded in 4 samples.)
Dissolved oxygen	6.0 mg/L A&Ww	08/31/2004 – 3.9 mg/L	Attaining – Low dissolved oxygen due to natural conditions of low flow (0.05 cfs) and ground water upwelling. Nutrients are low (nitrogen 0.28 mg/L and phosphorus 0.024 mg/L)
Selenium	2.0 µg/L A&Ww chronic	01/31/2000 – 7.6 µg/L 01/19/2001 – 9.0 µg/L	Remains Impaired – 2 exceedances during the assessment period. Due to the lab reporting limit for selenium, 16 other samples could not be used to determine attainment (see note below)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Collected all core parameters		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		High Priority –Collect copper and selenium samples to support development of TMDLs and site specific copper standards. Use lower lab detection limits for selenium and dissolved mercury.	

POWERS GULCH From headwaters to Haunted Canyon 15060103 – 884 3.8 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&We – Inconclusive PBC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 04/17/2002 – 04/28/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Near Haunted Canyon SRPWG000.15 102665	BHP Ambient ADEQ TMDL	8-9 dissolved and total metals: Copper, selenium, and zinc 8 total metals only: Arsenic, beryllium, cadmium, manganese, pH 9		8 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (dissolved)	9.8 µg/L at 40 mg/L hardness A&We acute	03/10/2004 – 21 µg/L	Inconclusive – Only 1 exceedance in the last 3 years of monitoring.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Copper	Insufficient core parameters to assess designated uses		Lab detection limit for selenium was higher than A&W chronic criteria.
DISCUSSION OF EXCEEDANCES		Samples were collected to support the Pinto Creek copper TMDL and site specific copper standard development. Copper loadings from this tributary will be addressed in the Pinto Creek copper TMDL currently being developed.	
MONITORING RECOMMENDATIONS		High Priority –Collect additional samples to support TMDL development as needed. Use lower detection limits for selenium. Collect core parameters to represent at least 3 seasons during an assessment period.	

ROOSEVELT LAKE 15060103 – 1240 18,350 Acres	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Attaining DWS – Attaining AgI – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 01/31/2000 – 01/11/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
A dam SRROO-A 100075	UA and AGFD Ambient	9-25 total and 3-6 dissolved: Arsenic, cadmium, chromium, copper, lead, nickel, silver, zinc 9-25 total and 0-2 dissolved: Antimony, beryllium, boron, manganese, selenium, thallium	68-90 samples: Ammonia, nitrate-nitrite, total nitrogen, dissolved oxygen, pH 18 samples: Total phosphorus.	3 *E. coli* bacteria 24 Fluoride 61 Total dissolved solids 21 Turbidity
At Salt River Inlet SRROO-B 10076	UA and AGFD Ambient			
At Tonto Creek Inlet SRROO-C 100077	UA and AGFD Ambient			
Mid lake SRROO-E 100079	UA and AGFD Ambient			
At Marina SRROO-MAR 101711	UA Ambient			
At Windy Hill SRROO-WIND 102557	AGFD Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper	500 µg/L AgL	10/08/2002 – 715 µg/L	Attaining – 1 exceedance in 27 samples. (Binomial)
Dissolved oxygen	6.0 mg/L A&Ww	10/08/2004 – 4.5 mg/L	Attaining – One low dissolved oxygen out of 75 samples. (Binomial)
Lead	15 µg/L DWS and FBC	07/19/2002 – 35 µg/L	Attaining – 1 exceedance in 24 samples. (Binomial)
Manganese	980 µg/L DWS	07/19/2002 – 1680 µg/L 12/17/2003 – 1120 µg/L	Attaining – Only 2 exceedances in 30 samples. (Binomial)
pH	<9.0 SU A&Ww, FBC, AgI, AgL, DWS	03/06/2003 – 9.3 SU 09/30/2004 – 10.4 SU	Attaining – only 2 exceedances in 79 samples. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	**MISSING CORE PARAMETERS**	**MISSING SEASONAL DISTRIBUTION**	**DETECTION LIMITS NOT LOW ENOUGH**
	Need composite nitrogen and phosphorus samples to assess A&Wc and FBC as attaining uses (see comment below)		
DISCUSSION OF SITE SPECIFIC NUTRIENT STANDARDS		Nitrogen and phosphorus standards established for this lake require composite samples collected at the surface, 2 meter, and 5 meter depths. No composite samples were collected and analyzed during this assessment period. This standard is to be replaced by the proposed lake narrative nutrient implementation procedures currently being adopted through the Triennial Review process. The nitrogen criterion (1.0 mg/L) was exceeded in 12 of 89 samples collected in the top meter. At site B, 1.0 mg/L was exceeded in 6 of 23 samples (which is normally impaired). However, since these were not composite samples, the standard did not apply.	
MONITORING RECOMMENDATIONS		Medium Priority –New methods for implementing the narrative nutrient standard should be applied to this lake once adopted.	

RYE CREEK	USE SUPPORT	OVERALL ASSESSMENT	
From headwaters to Tonto Creek 15060105 -- 014 17.8 Miles	A&Ww – Attaining FBC – Inconclusive FC – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 01/09/2002 – 09/04/2002		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Rye Arizona SRRYE007.56 102832	AGFD Ambient	4 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, zinc 4 total metals only: Boron, lead, manganese, mercury	4 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	2 *E. coli* bacteria 4 Fluoride 4 Total dissolved solids 4 Turbidity
Below Rye Arizona SRRYE006.15 102833	AGFD Ambient			
Above Bridge SRFYE001.27 101297	ADEQ Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	6.0 mg/L A&Ww	04/18/2002 – 5.79 mg/L 09/04/2002 – 2.72 mg/L	Attaining – Low dissolved oxygen due to natural conditions related to low flow and ground water upwelling. Flow 0.3 – 0.5 cfs. Low nutrients (nitrogen 0.2 to 0.03 mg/L; phosphorus 0.01to 0.03 mg/L).

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	E. coli bacteria needed to assess FBC		Lab detection limits for selenium was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Use a lower lab detection limit for selenium. Collect missing core parameters to represent at least 3 seasons during an assessment period.	

SAGUARO LAKE 15060106A -- 1290 1025 Acres	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Inconclusive FC – Attaining DWS -- Attaining AgI – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 10/30/2000 – 11/05/2004 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At dam SRSAG-A 100082	ADEQ, AGFD, UA Ambient	6-16 total and 5 dissolved: Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, nickel, selenium, silver, and zinc 15 total metals only: Mercury 4 total metals only: Thallium	40-44 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	16 *E. coli* bacteria 25 Fluoride 14 Total dissolved solids 19 Turbidity
Southeast of Bagley Flat SRSAG-B 101810	UA, AGFD Ambient			
Near Perrigrin Cove SRSAG-2 102559	AGFD Ambient			
At Bagley Flat SRSAG-BAG 101001	AGFD Ambient			
At Butcher Jones SRSAG-BJ 100081	ADEQ, UA Ambient			
At campground SRSAG-MFLAT 101698	AGFD, UA Ambient			
Marina site 1 SRSAG-MAR1 100994	ADEQ, UA Ambient			
Marina site 2 SRSAG-MAR2 100995	ADEQ, AGFD Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	7.0 mg/L A&Wc	06/27/2001 – 6.0 mg/L – MFLAT 08/06/2001 – 2.2 mg/L – 1 & B 10/15/2001 – 6.1 mg/L – 1 06/04/2003 – 6.6 mg/L – B 08/20/2004 – 6.4 mg/L – A	Inconclusive – Low dissolved oxygen in the top meter at least at one site during 5 of 19 sampling events (7-day periods). Low dissolved oxygen in 6 of 42 samples in the top meter. (Binomial method requires a minimum of 5 exceedances and 20 samples. At 42 samples, impairment occurs at 8 exceedances.)
Fluorine	4000 µg/L DWS	01/18/2001 – 15,800 µg/L	Attaining – Only 1 exceedance in 25 samples. (Binomial) Data reliability is questionable because result was several levels of magnitude higher than other values reported.
pH (high)	<9.0 SU	06/27/2001 – 9.6 SU 05/03/2002 – 9.4 SU	Attaining – pH exceeded standards in 2 of 19 sampling events (2 of 42 samples). (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	**MISSING CORE PARAMETERS**	**MISSING SEASONAL DISTRIBUTION**	**DETECTION LIMITS NOT LOW ENOUGH**
Dissolved oxygen	Need composite nitrogen and phosphorus samples to assess A&Wc and FBC		Lab detection limit for dissolved mercury was higher than the A&W chronic criteria.
DISCUSSION OF SITE SPECIFIC NUTRIENT STANDARDS		Nitrogen and phosphorus standards established for this lake require composite samples collected at the surface, 2 meter, and 5 meter depths. No composite samples were collected and analyzed during this assessment period. This standard is to be replaced by the proposed lake narrative nutrient implementation procedures currently being adopted through the Triennial Review process. The nitrogen criterion (1.0 mg/L) was exceeded in 8 of 43 samples collected in the top meter, but since these were not composite samples, the standard did not apply.	
MONITORING RECOMMENDATIONS		Medium Priority –Collect more dissolved oxygen samples due to exceedances. Low dissolved oxygen and high pH may be symptoms of excess nutrient loading. New methods for implementing the narrative nutrient standard should be applied to this lake once adopted, to determine whether narrative nutrient violations are occurring. Use a lower lab detection limit for dissolved mercury.	

SALT RIVER From Pinal Creek to Roosevelt Dam 15060103 -- 004 7.5 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Ww – Impaired FBC – Attaining FC – Attaining AgI – Attaining AgL – Attaining	Category 5 Impaired	Suspended sediment concentration	Add Suspended sediment concentration (SSC)

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 02/16/2000 – 08/31/2004		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Lake Roosevelt USGS #09498500 SRSLR107.43 100745	USGS Ambient	27-28 dissolved and total metals: Antimony, arsenic, barium, boron, beryllium, cadmium, chromium, copper, lead, manganese, nickel, selenium, silver, thallium, and zinc	22-28 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	23 *E. coli* bacteria 28 Total dissolved solids 28 Suspended sediment concentration 27 Turbidity 13 Cyanide

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Arsenic	50 µg/L FBC	08/05/2002 – 87.7 µg/L 07/22/2003 – 70 µg/L 08/01/2003 – 91 µg/L	Attaining – Only 3 of 28 samples exceeded criterion. (Binomial) Exceedances appear related to the Rodeo-Chediski Wildfire in 2002. Fire recovery shown in the five samples taken in 2004, as arsenic averaged 6.8 µg/L.
Chromium	100 µg/L FBC	08/07/2002 – 101.3 µg/L 06/03/2003 – 134 µg/L 07/22/2003 – 170 µg/L 08/01/2003 – 218 µg/L	Attaining – Only 4 of 28 samples exceeded criterion. (Binomial) Exceedances appear related to the Rodeo-Chediski Wildfire in 2002. Fire recovery shown in the five samples taken in 2004, as chromium averaged 2 µg/L.
Cyanide	41 µg/L – A&Ww acute 10 µg/L – A&Ww chronic	08/07/2002 – 120 µg/L 07/22/2003 – 30 µg/L 08/01/2003 – 30 µg/L	Inconclusive –Chronic exceedances occurred during elevated flows and may not indicate conditions during a 4-day period. Exceedances appear related to the Rodeo-Chediski Wildfire in 2002. Fire recovery shown in the last 5 samples collected, as cyanide was below the lab detection limit (<10 µg/L).
Dissolved oxygen	6.0 mg/L A&Ww	07/16/2002 – 0.9 µg/L 08/06/2002 – 0.1 µg/L 06/03/2003 – 5.7 µg/L 07/22/2003 – 2.8 µg/L 08/01/2003 – 4.0 µg/L	Inconclusive – 5 of 28 samples showed low DO. (Binomial) Exceedances appear related to the Rodeo-Chediski Wildfire in 2002. Fire recovery shown as all 5 samples taken in 2004 met standards (averaged 8.8 mg/L).
E. coli bacteria	235 CFU/100 ml	07/17/2002 – >2,700 CFU/100 ml 06/03/2003 – 2000 CFU/100 ml 07/22/2003 – 3000 CFU/100 ml 08/01/2003 – 19,000 CFU/100 ml	Inconclusive –4 exceedances in the past 3 years of monitoring. All appear related to the Rodeo-Chediski Wildfire in 2002. Fire recovery shown in the five samples taken in 2004, *E. coli* bacteria results ranged from 2.0 to 200 CFU/100 ml.

Lead	15 µg/L – FBC 100 µg/L – AgL	07/16/2002 – 131 µg/L 08/05/2002 – 529.7 µg/L 06/03/2003 – 313 µg/L 07/22/2003 – 300 µg/L 08/01/2003 – 414 µg/L	Inconclusive – 5 exceedances in 28 samples. (Binomial) Exceedances appear related to the Rodeo-Chediski Wildfire in 2002. Fire recovery shown in 5 samples collected in 2004, as Lead averaged 3.8 µg/L.
Manganese	10,000 µg/L – Agl 19,699 µg/L -- FBC Agl	08/05/2002 – 29,733 µg/L 06/03/2003 – 11,000 µg/L 07/22/2003 – 18,100 µg/L	Attaining – 3 of 28 samples exceeded the 10,000 and only 1 exceeded the 19,699. (Binomial) Exceedances appear related to the Rodeo-Chediski Wildfire in 2002. Fire recovery shown in the five samples taken in 2004, as manganese averaged 98 µg/L.
Selenium	2 µg/L A&Ww chronic	08/07/2002 – 2.7 µg/L 07/17/2003 – 3 µg/L 07/22/2003 – 8 µg/L 08/01/2003 – 9 µg/L	Inconclusive – Four exceedances in the assessment period; however, all appear related to the Rodeo-Chediski Wildfire in 2002. Fire recovery shown in the last 4 samples in 2004, as selenium was below the criterion.
Suspended sediment concentration (SSC)	Geometric mean 80 mg/L A&Wc	04/18/2001 – 176 mg/L – 1700 cfs* 09/05/2001 – 307 mg/L – 206 cfs 06/12/2002 – 101 mg/L – 75 cfs 07/16/2002 – 5366 mg/L – 624 cfs* 08/05/2002 – 22,850 mg/L – 2030 cfs* 08/19/2002 – 632 mg/L – 172 cfs 06/03/2003 – 15,300 mg/L – 325 cfs 07/22/2003 – 42,500 mg/L – 1120 cfs* 08/01/2003 – 25,800 mg/L – 627 cfs* 03/31/2004 – 273 mg/L – 1010 cfs* 04/21/2004 – 331 mg/L – 804 cfs* 08/31/2004 – 492 mg/L – 130 cfs	Impaired – SSC criterion of 80 mg/L was exceeded in 12 of 28 sampling events. Seven of the exceedances (*) were not included in the geometric mean calculation, because flows were above the 50th percentile of flow. Using the remaining 21 samples, the geometric mean of a minimum of 4 consecutive samples exceeded 80 mg/L four times. Some of the exceedances were due to the fire in 2002; however, high levels of sediment transport were indicated in 2001 before the fire also. (Note that the old turbidity standard (50 NTU) was also exceeded in 10 of 27 field turbidity samples.)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Cyanide, dissolved oxygen, lead, selenium, and *E. coli* bacteria	Core parameters collected.		Lab detection limit for dissolved mercury was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		High Priority –Collect sediment samples to support development of an SSC TMDL. Recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted. Collect additional cyanide, dissolved oxygen, lead, selenium, and *E. coli* bacteria samples due to exceedances. Use a lower lab detection limit for dissolved mercury.	

SALT RIVER From Stewart Mountain Dam (Saguaro Lake) to Verde River 15060106A -- 003 10.1 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Wc – Impaired FBC – Inconclusive FC – Attaining DWS – Attaining AgI – Attaining AgL – Attaining	Category 5 Impaired	Low dissolved oxygen	Low dissolved oxygen and copper were added to 303(d) List in 2004. Delist copper (see discussion below)

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 02/01/2000 – 09/02/2004 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Tubing site --Saguaro Lake Ranch SLSLR054.49 103271	USFS Bacteria only	21-22 dissolved and total metals: Antimony, arsenic, barium, boron, beryllium, cadmium, chromium, copper, lead, manganese, nickel, selenium, silver, thallium, and zinc 22 total metals only: Mercury	22-23 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	22 *E. coli* bacteria 1 Fluoride (22 dissolved) 22 Total dissolved solids 22 Suspended sediment concentration 21 Turbidity
Below Steward Mountain Dam USGS #09502000 Tubing Bus Stop 2 SRSLR051.32 100746	USGS Ambient			
Tubing Bus Stop 4 SLSLR047.21 103272	USFS Bacteria only			
Phon D Sutton Picnic Site SLSLR044.95 103273	USFS Bacteria only			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	7.0 mg/L A&Wc	07/27/2000 – 5.9 mg/L 07/25/2001 – 5.5 mg/L 10/03/2001 – 6.0 mg/L 05/10/2002 – 6.5 mg/L 08/29/2002 – 6.5 mg/L 04/04/2003 – 5.1 mg/L 06/27/2003 – 5.5 mg/L 08/08/2003 – 4.5 mg/L 04/26/2004 – 6.4 mg/L 05/06/2003 – 6.3 mg/L	Remains impaired – Did not meet standards in 10 of 23 samples. Low flow (4.2-5.8 cfs) associated with only two measurements. Elevated nitrogen (at 1.24 mg/L) in only 1 sample. (Binomial) (Note: ADEQ has proposed changing the designated use at this lake to A&Ww, which has a dissolved oxygen standard of 6.0 mg/L. This would adjust the number of low dissolved oxygen samples to 5 of 23 samples. It would remain impaired.)
E. coli bacteria	235 CFU/100 ml	08/15/2001 – 300 CFU/100 ml 06/13/2002 – 240 CFU/100 ml	Inconclusive – Exceedances do not exceed the assessment screening value of 300 CFU/100 ml; therefore, ADEQ will do further monitoring before listing the reach as impaired. (See assessment methods concerning this screening value.)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	**MISSING CORE PARAMETERS**	**MISSING SEASONAL DISTRIBUTION**	**DETECTION LIMITS NOT LOW ENOUGH**
	Core parameters collected.		Lab detection limit for dissolved mercury was higher than the A&W chronic criteria.
DISSOLVED COPPER		Delisting copper. In 22 total and 22 dissolved samples, copper did not exceed a surface water quality standard.	
MONITORING RECOMMENDATIONS		High Priority –Collect dissolved oxygen samples to support development of TMDL. Collect additional *E. coli* samples due to the exceedances. Use a lower lab detection limit for dissolved mercury.	

SNAKE RIVER From headwaters to Black River 15060101 – 045 6.2 Miles Unique Water	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Inconclusive FC – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATES: 11/15/2001; 06/12/2002 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
1.3 miles above Black River SRSNK001.33 101298	ADEQ Ambient	2 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, mercury, zinc 2 total and 0-1 dissolved: Boron, lead, manganese, mercury	2 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	2 *E. coli* bacteria 2 Fluoride 2 Total dissolved solids 2 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters to assess any designated uses.	Insufficient sampling events (only 2)	Lab detection limits for selenium was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least 3 seasons during the assessment period. Use a lower lab detection limit for the selenium.	

SOUTH FORK BEAR WALLOW CREEK From headwaters to Bear Wallow Creek 15060101 -- 258 3.8 Miles Unique Water	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Inconclusive FC – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 11/14/2001; 06/11/2002		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above pack trail crossing SRSBE000.13 101261	ADEQ Ambient	2 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, zinc 2 total and 0-1 dissolved: Boron, lead, manganese, mercury	2 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	2 *E. coli* bacteria 2 Fluoride 2 Total dissolved solids 2 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	Lab detection limit for selenium was higher than A&Wc chronic standards.
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least 3 seasons during the assessment period. Use a lower lab detection limit for selenium.	

SPRING CREEK From headwaters to Tonto Creek 15060105 -- 010 20.5 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Attaining FBC – Inconclusive FC – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 12/19/2001 – 09/05/2002		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
West of Young, AZ SRSPI011.54 100380	ADEQ Ambient	3-4 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, zinc 3 total and 0-2 dissolved: Boron, lead, manganese, mercury	4 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	2 *E. coli* bacteria 3 Fluoride 3 Total dissolved solids 3 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient *E. coli* bacteria to assess FBC.		Lab detection limits for selenium was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least 3 seasons during the assessment period. Use a lower lab detection limit for selenium.	

STINKY CREEK From headwaters to Fort Apache Reservation 15060101 – 352A 2.1 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Inconclusive FC – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATES: 11/15/2001; 06/10/2002 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above West Fork Black River SRST1000.38 101303	ADEQ Ambient	2 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, zinc 2 total and 0-1 dissolved: Boron, lead, manganese, mercury	2 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	1 *E. coli* bacteria 2 Fluoride 2 Total dissolved solids 2 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	7.0 mg/L A&Wc	06/10/2002 – 5.5 mg/L	Attaining -- Low dissolved oxygen due to natural conditions of low flow and ground water upwelling. Flow 0.46 cfs. Low nutrients (nitrogen 0.4 mg/L, phosphorus 0.06 mg/L)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	Lab detection limit for selenium is higher than A&Wc chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least 3 seasons during the assessment period. Use a lower lab detection limit for selenium.	

THOMAS CREEK From headwaters to Beaver Creek 15060101 -- 285 4.1 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Inconclusive FC – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 04/16/2003 – 03/23/2004 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
East Weir #1 SRTHO002.92 102148	ADEQ Special study		2 samples: Total phosphorus, dissolved oxygen, pH	1 Total dissolved solids 3 Suspended sediment concentration 3 Turbidity
East Weir #2 SRTHO002.86 102147	ADEQ Special study			
Above Beaver Creek SRTHO000.05 102138	ADEQ Special study			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	7.0 mg/L A&Wc	06/20/2003 – 5.6 mg/L	Attaining -- Low dissolved oxygen due to natural conditions caused by low flow (0.01 cfs) and ground water upwelling. Low nutrients (0.07 mg/L total phosphorus at time)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least 3 seasons during the assessment period.	

TONTO CREEK From headwaters to unnamed tributary at 341810 / 1110414 15060105 – 013A 8.1 Miles	USE SUPPORT		OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A D E Q	A&Wc – Impaired FBC – Impaired FC – Attaining AgI – Attaining AgL – Attaining	Category 4A (*E. coli*) Not attaining (Impaired) Category 5 (phosphorus and low dissolved oxygen) Impaired	*E. coli* bacteria, and phosphorus	Add phosphorus and low dissolved oxygen. *E. coli* and TMDL approved in 2005. Implementing strategies to reduce loadings.
	E P A	A&Wc – Impaired FBC – Impaired	Category 4A (nitrogen) Not attaining (Impaired) Category 5 (Low dissolved oxygen)	Nitrogen and low dissolved oxygen	EPA listed nitrogen and low dissolved oxygen in 2004. Nitrogen TMDL approved in 2005. Implementing strategies to reduce loadings

Light blue highlights indicate EPA impairments based on EPA assessment and listing criteria. This listing may change when EPA reviews and approves the 2006/2008 impaired waters list. Such listings do not satisfy requirements established in ADEQ's Impaired Water Identification Rule; therefore, they are not included in the list of ADEQ's Impaired waters (Appendix B and Appendix C).

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 05/23/2000 – 10/23/2003 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At headwater spring SRTON062.89 101016	ADEQ TMDL	5-26 total and dissolved metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, nickel, manganese, mercury, silver, thallium, and zinc 25-26 Total metals only: Boron, manganese	156-166 samples: Total nitrogen, total phosphorus, total Kjeldahl nitrogen, dissolved oxygen, pH 26 samples: Ammonia	103 *E. coli* bacteria 26 Fluoride 23 Total dissolved solids 124 Suspended sediment concentration 167 Turbidity
Below AGFD Hatchery SRTON062.40 100351	ADEQ TMDL & Ambient			
Below hatchery mixing zone SRTON062.28 101017	ADEQ TMDL			
Above Baptist Camp SRTON061.37 101018	ADEQ TMDL			
Below Baptist Camp SRTON060.50 100352	ADEQ TMDL			
Above Horton Creek and waterfall SRTON059.65 101759	ADEQ TMDL			
Above Horton Creek SRTON059.53 101020	ADEQ TMDL			
Below Horton Creek SRTON059.49 101761	ADEQ TMDL			
Further below Horton Creek SRTON059.44 101021	ADEQ TMDL			
Upstream from campground SRTON058.93 101629	ADEQ TMDL			

Above Kohl's Ranch SRTON058.63 100354	ADEQ TMDL			
Below Kohl's Ranch SRTON057.70 100929	ADEQ TMDL			
Above Christopher Creek SRTON056.59 101018	ADEQ TMDL			
Below Christopher Creek SRTON056.39 100360	ADEQ & USGS Ambient & TMDL			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	7.0 mg/L A&Wc	05/23/2000 – 6.0 mg/L 05/21/2002 – 6.2 mg/L 06/11/2002 – 4.9 mg/L 06/25/2002 – 6.3 mg/L 07/09/2002 – 6.5 mg/L 07/22/2002 – 6.5 mg/L 07/08/2003 – 6.0 mg/L 07/21/2003 – 6.3 mg/L 08/18/2003 – 6.3 mg/L 10/22/2003 – 6.1 mg/L	Remains impaired – 10 of 166 samples measured low dissolved oxygen. Ground water upwelling may be the primary cause; however, nutrient loading may also contribute to low dissolved oxygen.
E. coli bacteria	235 CFU/100 ml FBC	09/03/2000 – 659 CFU/100 ml 07/23/2003 – 613 CFU/100 ml 07/30/2003 – >2419 CFU/100 ml 08/06/2003 – 260 CFU/100 ml 08/12/2003 – 520 CFU/100 ml 08/20/2003 -- >2419 CFU/100 ml	Remains impaired – 6 exceedances during the assessment period.
Suspended sediment concentration (SSC)	Geometric mean 80 mg/L A&Wc	07/23/2002 – 166 mg/L 07/23/2003 – 202 mg/L 07/30/2003 – 232 mg/L 08/20/2003 – 561 mg/L	Attaining – 4 samples exceeded the 80 mg/L criterion; however, the geometric mean was not exceeded. Note that the old turbidity standard (10 NTU) was also exceeded during 18 sampling events.
Nitrogen	0.5 mg/L – annual mean A&Wc and FBC	2002 – 0.635 mg/L	Inconclusive – The annual mean was exceeded at one site in 2002.
Phosphorus	0.1 mg/L – annual mean A&Wc and FBC	2000 – 0.21 mg/L annual mean 2003 -- 0.14 mg/L annual mean	Impaired – The annual mean was exceeded at one site in 2000 and at a different site in 2003. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Collected all core parameters		Lab detection limits for selenium and dissolved metals (copper, lead, mercury) were higher than A&Wc chronic criteria.
DISCUSSION OF NITROGEN IMPAIRMENT		Evidence of potential nutrient impairment: 1. The nitrogen TMDL was completed and approved by EPA in 2005; 2. The annual mean was exceeded at one site in 2002; and 3. Monitoring was conducted in 2000-2004.		
MONITORING RECOMMENDATIONS		Medium Priority –Collect additional nutrient and *E. coli* bacteria data to determine effectiveness of TMDL strategies being implemented. Actions to reduce nitrogen and *E. coli* bacteria loadings will also reduce phosphorus loadings; therefore, development of a phosphorus TMDL is a low priority. Use lower lab detection limits for selenium and dissolved metals. Recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted.	

TONTO CREEK From tributary at 341810 / 1110414 to Haigler Creek 15060105 – 013B 8.5 Miles	USE SUPPORT		OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	ADEQ	A&Ww – Inconclusive FBC – Impaired FC – Attaining AgI – Attaining AgL – Attaining	Category 4A Not attaining (Impaired)	*E. coli* bacteria	*E. coli* TMDL approved in 2005. Implementing strategies to reduce loadings.
	EPA	A&Wc – Impaired FBC – Impaired	Category 4A Not attaining	Nitrogen	EPA listed nitrogen in 2004. Nitrogen TMDL approved in 2005. Implementing strategies to reduce loadings

Light blue highlights indicate EPA impairments based on EPA assessment and listing criteria. This listing may change when EPA reviews and approves the 2006/2008 impaired waters list. Such listings do not satisfy requirements established in ADEQ's Impaired Water Identification Rule; therefore, they are not included in the list of ADEQ's Impaired waters (Appendix B and Appendix C).

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 05/23/2000 – 10/23/2003 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Bear Flats SRTON055.09 100357	ADEQ TMDL	4 total and dissolved metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, zinc 4 total and 0-2 dissolved: Boron, lead, manganese, mercury	32-35 samples: Total nitrogen, total phosphorus, total Kjeldahl nitrogen, dissolved oxygen, pH 4 samples: Ammonia	23 *E. coli* bacteria 4 Fluoride 4 Total dissolved solids 24 Suspended sediment concentration 34 Turbidity
Below Bear Flats SRTON053.87 100358	ADEQ TMDL & Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
E. coli bacteria	235 CFU/100 ml FBC	09/02/2000 – 524.7 CFU/100 ml 10/31/2000 – 272 CFU/100 ml 07/23/2003 – >2419 CFU/100 ml 08/07/2003 – 299 CFU/100 ml 08/20/2003 -- >2419 CFU/100 ml	Remains impaired – 5 exceedances during the assessment period.
Nitrogen	0.5 mg/L – annual mean 2.0 mg/L – single sample maximum A&Ww and FBC	07/23/2002 – 2.08 mg/L (SSM) 2002 – 0.59 mg/L (annual mean)	Inconclusive – The annual mean was exceeded at one site in 2002. The single sample maximum was exceeded once in 35 samples (17 sampling events). (Binomial)
Phosphorus	0.1 mg/L – annual mean 0.8 mg/L – single sample maximum A&Ww and FBC	08/20/2003 – 1.5 mg/L 2003 – 0.57 mg/L (annual mean)	Inconclusive – The annual mean was exceeded at one site in 2003. (Another site was at the standard 0.101 mg/L in 2002.)
Suspended sediment concentration (SSC)	Geometric mean 80 mg/L A&Ww	07/23/2002 – 734 mg/L 08/20/2003 – 1117 mg/L	Attaining – 2 samples exceeded the 80 mg/L criterion; however, both exceedances occurred during elevated flows so the values were not included in the geometric mean calculation.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	**MISSING CORE PARAMETERS**	**MISSING SEASONAL DISTRIBUTION**	**DETECTION LIMITS NOT LOW ENOUGH**
Phosphorus	Collected all core parameters		Lab detection limit for selenium was higher than A&Wc chronic criteria.
DISCUSSION OF NITROGEN IMPAIRMENT		Evidence of potential nutrient impairment: 1. The nitrogen TMDL was completed and approved by EPA in 2005; 2. The annual mean was exceeded at one site in 2002; and 3. Monitoring was conducted in 2000-2004.	
MONITORING RECOMMENDATIONS		Medium Priority –Collect additional nutrient and *E. coli* bacteria data to determine effectiveness of TMDL strategies being implemented. Collect samples during critical conditions. Use a lower lab detection limit for selenium. Recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted.	

TONTO CREEK From Rye Creek to Gun Creek 15060105 -- 008 4.7 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Attaining FBC – Attaining FC – Attaining AgI – Attaining AgL – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 01/31/2000 – 12/01/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Gun Creek and USGS gage SRTON019.37 100349	ADEQ Ambient	7-20 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, silver, thallium, and zinc 20 total and 0-2 dissolved: Boron, manganese	20-21 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	20 *E. coli* bacteria 20 Fluoride 20 Total dissolved solids 10 Suspended sediment concentration 21 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Core parameters collected.		Lab detection limit for dissolved mercury and selenium were higher than the A&W chronic criteria in at least 11 samples.
MONITORING RECOMMENDATIONS		Low Priority –Use lower lab detection limits for selenium and dissolved mercury.	

WEST FORK BLACK RIVER From Indian Reservation boundary to Black River 15060101 -- 048 14.6 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Attaining FC – Attaining DWS – Attaining AgI – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 10/24/2000 – 01/26/2004 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Thompson Creek SRWFB015.22 100692	ADEQ Special study	8 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, copper, zinc 8 total and 0-1 dissolved: Boron, lead, manganese, mercury 2 total and 1 dissolved: Barium, nickel, silver, and thallium	8 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, pH	7 *E. coli* bacteria 8 Fluoride 7 Total dissolved solids 69 Suspended sediment concentration 95 Turbidity
Above Forest Road #116 SRWFB013.89 102120	ADEQ Special study			
Below Forest Road #116 SRWFB013.67 101204	ADEQ Ambient and Special study			
At Forest Road #88 SRWFB003.45 102126	ADEQ Special study			
Above Home Creek SRWFB001.47 102130	ADEQ Special study			
At Buffalo Crossing SRWFB001.13 100376	ADEQ Ambient and Special study			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Suspended sediment concentration (SSC)	Geometric mean 80 mg/L A&Wc	03/24/2004 – 122.8 mg/L	Attaining – SSC criteria of 80 mg/L was exceeded once in 40 sampling events. The geometric mean standard was not exceeded.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Core parameters collected.		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Use lower lab detection limits for selenium and dissolved mercury. The old turbidity standard (10 NTU) was exceeded in 10 of 40 sampling events. Recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted.	

WEST FORK PINTO CREEK From headwaters to Pinto Creek 15060103 – 066 11.6 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&We – Inconclusive PBC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 03/30/2001 – 01/04/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below Kennedy Ranch SRWPN004.47 102433	ADEQ TMDL	4-5 dissolved and total: Copper, selenium, and zinc 1 dissolved and total metals: Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, lead, manganese, mercury, nickel, silver, thallium. 7 pH	1 samples: Ammonia, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen 2 Dissolved oxygen 7 pH	1 Fluoride
At WF SRWPN000.39 102434	ADEQ TMDL			
At Pinto Creek SRWPN000.01 102435	ADEQ TMDL			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (dissolved)	7.8 µg/L at 78 mg/L hardness A&We acute	01/04/2005 – 78 µg/L	Inconclusive – 1 exceedance in the last 3 years of monitoring.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	
DISCUSSION OF EXCEEDANCES		Samples were collected to support the Pinto Creek copper TMDL and site specific copper standard development. Copper loadings from this tributary will be addressed in the Pinto Creek copper TMDL currently being developed.	
MONITORING RECOMMENDATIONS		High Priority –Collect additional samples to support TMDL development as needed. Collect core parameters to represent at least 3 seasons during the assessment period. Use lower detection limits for selenium and dissolved mercury.	

WILLOW CREEK	USE SUPPORT	OVERALL ASSESSMENT	
From headwaters to Beaver Creek 15060101 -- 049 7.0 Miles	A&Wc – Inconclusive FBC – Inconclusive FC – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 04/15/2003 – 03/23/2004		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Forest Road #26 SRW1L001.73 102146	ADEQ Special Study		2 samples: Total phosphorus, dissolved oxygen, pH	1 Total dissolved solids 3 Suspended sediment concentration 3 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least 3 seasons during the assessment period.	

San Pedro Watershed

Watershed Description

This watershed encompasses three hydrological areas:

- San Pedro River, which begins in the mountains near Cananea Sonora, Mexico, and flows north about 100 miles through the southeast corner of Arizona to join the Gila River near Winkelman, Arizona;
- Willcox Playa, a terminal basin (does not drain out of the area), which contains a 30,000 acre ephemeral lake (playa); and
- Two relatively short drainages that flow to the Rio Yaqui in Mexico: Whitewater Draw and Black Draw.

It is a 7,015 square mile watershed is lightly populated with only 130,000 people (2000 census). Communities in the area include the rapidly growing Sierra Vista area and several historic towns, such as Tombstone, Douglas, and Bisbee. Grazing is widespread, with significant areas of irrigated agriculture located on the eastern side of the watershed. Historic copper, silver, and gold mining took place across the watershed; however, only a few mines are still active. Land ownership is divided approximately as: 40% private, 40% state, 20% federal (no tribal land). The Bureau of Land Management established a 50,000 acre San Pedro Riparian National Conservation Area in 1988 to protect this critical habitat.

Elevation varies from 4,000 feet (above sea level), with desert grassland and warmwater aquatic communities, to 10,700 feet at Mount Graham, with alpine forest. Areas above 5,000 feet typically support coldwater aquatic communities where perennial waters exist.

Water Resources

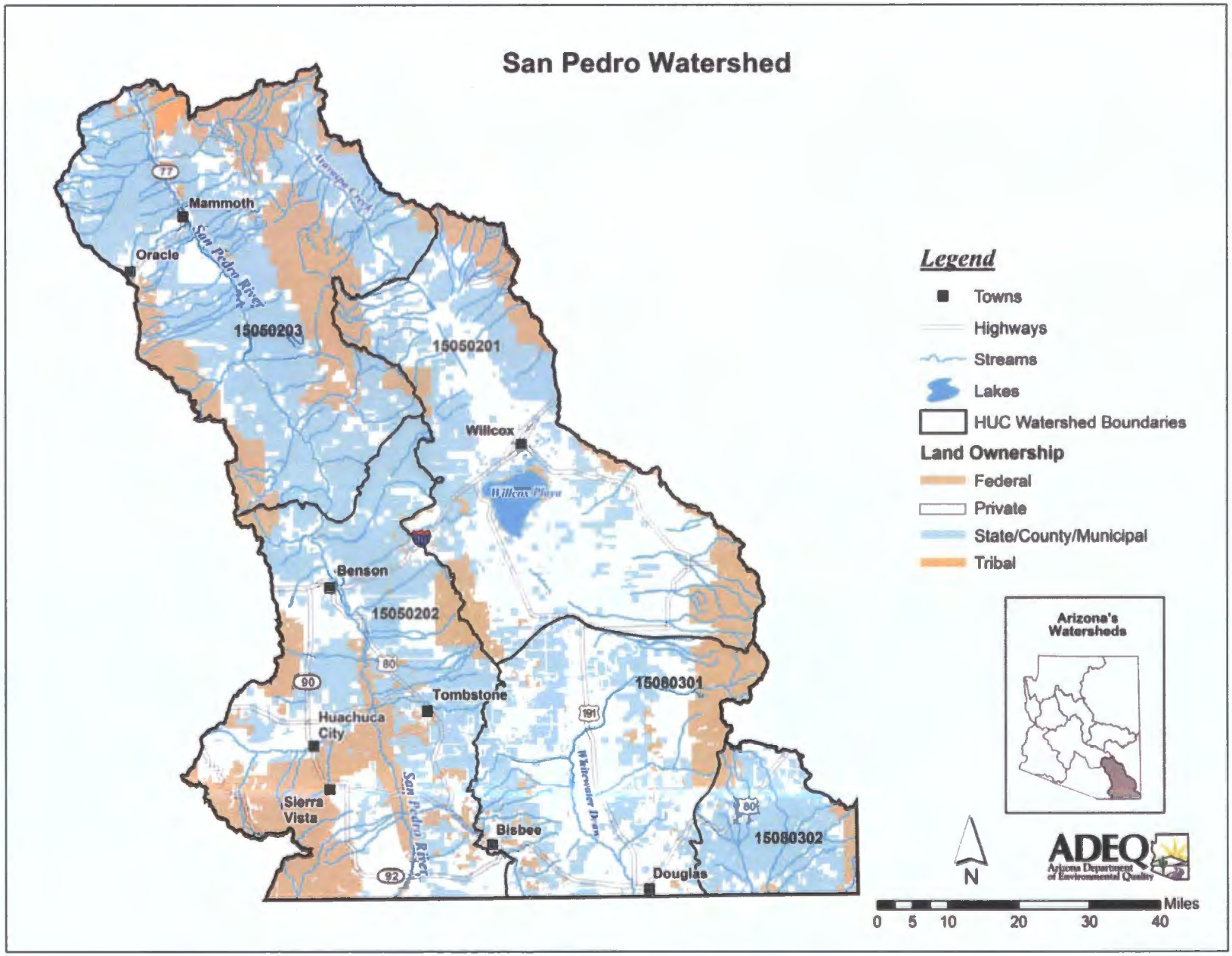
The area gets little precipitation, with 10-15 inches of rain and 0-5 inches of snow. Springs provide perennial flow to segments of the San Pedro River and other streams in this watershed. Concerns have been raised about ground water pumping and water demand in the rapidly growing Fort Huachuca Army Base -- Sierra Vista area and the potential impact on perennial flow in the San Pedro River. In 2003, a Fort Huachuca Preservation Legislation required the Secretary of Interior to develop water use management and conservation measures necessary to restore and maintain the sustainable yield of the aquifer.

An estimate of surface water resources in the Salt Watershed is provided in the following table.

Estimated Surface Water Resources in the San Pedro Watershed

	Perennial	Intermittent	Ephemeral
Stream miles	195	665	6,610
	Perennial	Non-perennial	
Lake acres	1,319	29,471	

Estimated miles and acres are based on U.S. Geological Survey digitized hydrology at 1:100,000 and have been rounded to the nearest 5 miles or 5 acres. Ambient monitoring focuses on perennial waters; however, special investigations have identified water quality problems on intermittent and even ephemeral waters.


San Pedro Watershed
Mammoth
Oracle
San Pedro River
Tanque Creek
15050203
15050201
Willcox
Willcox Playa
Benson
15050202
Tombstone
Huachuca City
Sierra Vista
San Pedro River
Whitewater Draw
Bisbee
Douglas
15080301
15080302
77
80
90
191
92
Legend
Towns
Highways
Streams
Lakes
HUC Watershed Boundaries
Land Ownership
Federal
Private
State/County/Municipal
Tribal
Arizona's Watersheds
N
ADEQ
Arizona Department of Environmental Quality
Miles
0 5 10 20 30 40

Watershed Partnerships

- Campomocho-Sacaton Watershed Group
  This 42,000 acre subwatershed is in the Willcox Playa basin, includes most of Hook Open A Ranch and Redtail Ranch near Willcox, Arizona. The group's primary objective is to implement conservation practices that will improve watershed health and water quality, and reduce downstream flood damages. Projects are specifically aimed at reducing soil erosion and water runoff, increasing ground cover, and improving wildlife habitat to reduce negative economic impacts. The group has quarterly meetings. Contact Donna Matthews at (520) 384-2229 or donna.matthews@az.usda.gov; or Dan Skinner, Chair, d.skinner@goldtechind.com.

- Upper San Pedro Partnership
  This 1,875 square mile basin extends along the San Pedro River from Mexico to "the narrows." This partnership coordinates the identification, development, and implementation of policies and projects to meet water needs in the Sierra Vista area. The group meets in Sierra Vista on the second Wednesday of the month. Contact Carol Sanger, Coordinating Manager, carolsang6@cox.net or lhendrickson@co.cochse.az.us; or Bob Strain, Chair, at (520) 459-4763

- Community Watershed Alliance (Middle San Pedro)
  The area of concerns extends further north along the San Pedro River, between "the narrows" near Charleston to the Gila River at Winkleman, AZ. This grassroots group works to effect change that will benefit water quantity and quality. It meets on the 4th Tuesday of the month in Benson, AZ. Contact Mary McCool at (520) 798-0229; Al Turk, (520) 586-7086, Anna Landis (520) 586-7310, Peter Moran (520) 586-4456 or watergroup@aol.com.

Special Studies and Water Quality Improvement Projects

Total Maximum Daily Load Analyses – The following TMDL analyses have been completed, are ongoing, or are scheduled to be completed in this watershed. Further information about the status of these investigations or a copy of the TMDL, if completed, can be obtained at ADEQ's website: www.azdeq.gov.

- Mule Gulch and several of its tributaries in the Bisbee area are impaired due to copper, cadmium, zinc, and low pH (acidic).
  Metal concentrations and acid mine conditions primarily pose a risk to aquatic life and wildlife. The TMDLs being developed by ADEQ are complex due to natural background levels of metals and because source loading data is difficult to collect due to slope, intermittent and ephemeral flows, and drought conditions. To account for natural conditions, ADEQ is developing site specific standards. Meanwhile, the mining operation in the area has continued to implement additional management measures to address contamination.

- San Pedro River between Babocomari Creek and Dragoon Wash is impaired due to *Escherichia coli* bacteria.
  Exceedances of *E. coli* standards may represent a significant public health concern if people are swimming or even wading in the water. This bacteria TMDL was initiated in 2006.

- San Pedro River, between Dragoon Wash and Tres Alamos Wash, is impaired due to nitrate.
  This stretch of river is contaminated by underground flow of groundwater contaminated by nitrates. Remediation activities are occurring as part of a Superfund cleanup site, and the facility is doing monthly ground and surface water monitoring to evaluate the effectiveness. Although water quality continues to improve, will take time for the surface water quality to meet standards as there is significant ground water contamination.

- San Pedro River, from Aravaipa Creek to the Gila River, is impaired by *Escherichia coli* bacteria and selenium.
  Exceedances of *E. coli* standards may represent a significant public health concern if people are swimming or even wading in the water. Selenium may negatively impact federally protected birds (bald eagle and Southwest willow flycatcher) found in this area. TMDL initiated in 2006.

Water Quality Improvement Grant Projects – ADEQ awarded the following Water Quality Improvement Grants (319 Grants) in this watershed. More information concerning these grants or projects can be obtained at: http://www.azdeq.gov/environ/water/watershed/fin.html.

- **Turbidity Reduction in Aravaipa Creek Project**
  Coronado Resource Conservation and Development Area (2000)
  Divide the area into smaller pastures with fencing and adjust grazing so that a higher concentration of cattle will be on each pasture for a shorter length of time. This should improve soil, allow seed germination, and encourage vegetative regrowth. Add fencing to exclude cattle form the creek to improve riparian condition.

- **Borderlands Storm Water Runoff Control Project**
  Coronado Resource Conservation and Development Area (2001)
  Revegetate using native plantings and provide water spreader dikes on 2,500 acres of severely eroded rangeland along the Mexican border to reduce sediment loading.

- **Peppersauce Cave Water Restoration Project**
  Raymond C. Keeler (2001)
  Remove litter and graffiti from the permanent pools in the cave, disinfect the pools to eliminate the *Escherichia coli* bacteria contamination, and distribute educational materials.

- **Campomocho - Sacaton Storm Water Runoff Control Project**
  The Coronado Resource Conservation and Development Area (2001 and 2005)
  Install sediment retention structures and contouring, and reseed to reestablish vegetation to reduce erosive water velocity and sediment transport during storm events in the Willcox Playa Drainage Area.

- **San Pedro Wildlife Sanctuary Habitat Restoration Project**
  The Nature Conservancy (2001)
  Restore agricultural fields by introducing native plants and improving riparian flood plain condition along the San Pedro River. Provide an outdoor riparian exhibit for education and outreach.

- **Fort Huachuca East Range Road Closure and Stream Crossing Project**
  Engineering and Environmental Consultants, Inc (EEC) (2002)
  Close 81 miles of roadways within the Fort Huachuca East Range and provide various degrees of rehabilitation to these areas. Develop an exhibit, talks, and articles to demonstrate practical and new technologies used in this project.

- **Ramsey Canyon Preserve Parking Lot Runoff Reduction Project**
  The Nature Conservancy (2002)
  Divert water from the roof of the Ramsey Canyon Visitors Center and from the nearby forest road to reduce sediment transport to Ramsey Creek. Install retention systems and recontour parking areas to direct runoff to planted areas.

- **Wisconsin Mound Septic System at the Audubon Research Ranch Project**
  National Audubon Society Appleton-Whittell Research Ranch (2002)
  Replace failed septic system with this alternative system and host workshops on alternative systems.

- **St. David Community River Cleanup Project**
  The San Pedro National Resource Conservation District (2003)
  Work with community partners and clean up heavy trash dumping along the San Pedro River in the north section of the National Riparian Conservation Area.

- **Three Links Farm Riparian Habitat Restoration Project**
  The Nature Conservancy (2003)
  Fence of and enhance riparian habitat along the San Pedro River.

- **Cottonwood Creek Restoration and Sediment Control Project**
  Coronado Resource Conservation and Development Area (2004)
  Reduce stream bank erosion along Cottonwood Creek in the Whitewater Draw Drainage Area by using gabions to stabilize grade, fencing off livestock from riparian areas, and developing alternative water source for grazing.

- **Erosion Control in the Babacomari Project**
  Coronado Resource Conservation and Development Area (2006)
  Construct erosion control mats and waddles and revegetate the riparian area to stabilize two gullies in Lyle Canyon which are contributing sediment to Babacomari River.

- **Manzanita Erosion Control Project**
  Community Watershed Alliance (CWA) (2006)
  Install rip rap, culverts, and gully plugs and revegetate using seedlings to reduce erosion in the San Pedro watershed.

Water Protection Fund Projects – The following Water Protection Fund Projects were awarded by the Arizona Department of Water Resources. More information about these funds or projects can be obtained from the ADWR web site at: http//www.azwater.gov.

- **Lower San Pedro Watershed Project**
  The Redington National Resources Conservation District (2000)
  Provide a water resource assessment and provide a watershed alternatives plan for improving watershed conditions. The project also brought local communities together to address watershed issues and solicit public involvement.

- **Cooperative Grazing Management for Riparian Improvements Project**
  The Double Check Ranch and the Nature Conservancy (2000)
  Implement a cooperative grazing management plan. Fencing and alternative watering sources were developed to protect riparian areas along the San Pedro River.

- **Cottonwood Creek Restoration Project**
  The Coronado Resource Conservation and Development Area (2003)
  Restore riparian conditions along Cottonwood Creek in Whitewater Drainage Area.

Other Water Quality Studies – The following additional water quality related studies were completed since 2000 in this watershed:

- ***Water Issues of the Arizona - Mexico Border: The Santa Cruz, San Pedro, and Colorado Rivers.***
  Terry W. Sprouse, University of Arizona, Water Resources Research Center (2005)
  Summary of water quality and water quantity issues facing this region.

- ***Water Quality Data for Selected National Park Units, Southern and Central Arizona and West-Central New Mexico, Water Years 2003 and 2004***
  U.S. Geological Survey in cooperation with the National Park Service (2005)
  Field measurements and water samples were collected at springs, mine adits, streams, and wells at 30 sites in 9 park units in 2003-2004 to provide baseline (ambient) water quality information. Only 24 of the 30 sites were sampled three times due to drought conditions and lack of water during parts of the year. In the San Pedro Watershed, samples were collected in Coronado National Memorial. Analyses of data collected at these sites indicated:

- ***Assessment of Selected Inorganic Constituents in Streams in the Central Arizona Basins Study Area, Arizona and Northern Mexico, through 1998***
  David Anning – U.S. Geological Survey, National Water Quality Assessment Program (2003)

Inorganic chemical data (dissolved solids, suspended sediment, and nutrients) and stream properties (temperature, pH, dissolved oxygen) were analyzed to assess water quality, determine natural and human factors affecting water quality, and compute stream loads.

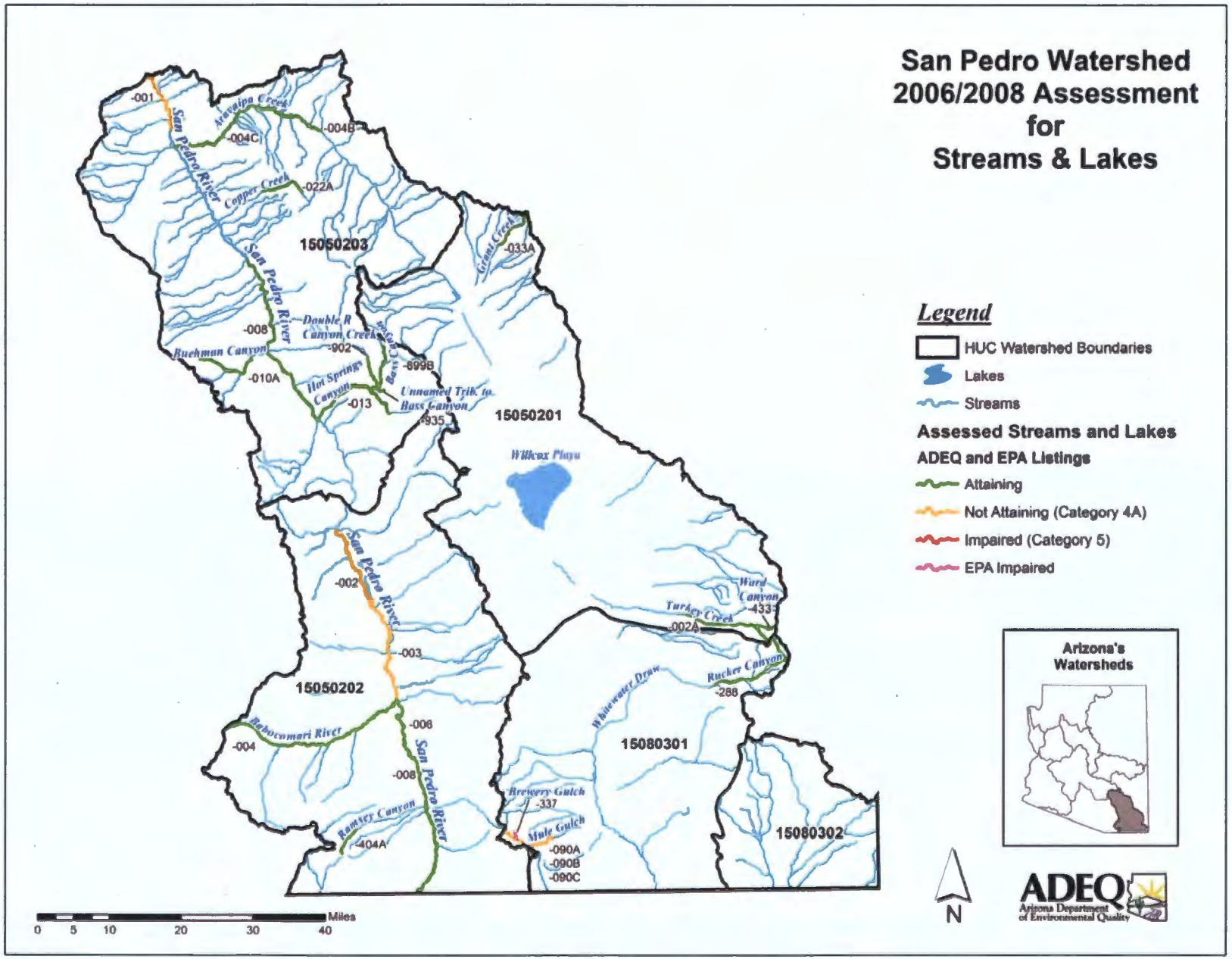
- ***Border Crossings – Water and Wastewater at the International Boundary***
  R.G. Charles Graf and Craig Tinney (ADEQ) and Tom Konner (EPA Region IX)
  September/October 2005 Southwest Hydrology (2005)
  This article describes the problems and progress being made in addressing water quality and wastewater infrastructure along the Mexican border with California and Arizona for seven key populations centers: San Diego/Tijuana, Tecate, Calexico/Mexicali, San Luis/San Luis Rio Colorado (Yuma area), Nogales, Naco/Bisbee, and Douglas/Agua Prieta.

Assessments

The San Pedro Watershed can be separated into the following drainage areas (subwatersheds):

15050201	Willcox Playa
15050202	Upper San Pedro
15050203	Lower San Pedro
15080301	Whitewater Draw
15080302	San Bernardino Valley

These drainage areas and the surface waters assessed as "attaining" or "impaired" are illustrated on the following watershed map. Methods used to complete these assessments are described in the "Surface Water Assessment Methods and Technical Support" document (2006).


San Pedro Watershed
2006/2008 Assessment
for
Streams & Lakes
Legend
HUC Watershed Boundaries
Lakes
Streams
Assessed Streams and Lakes
ADEQ and EPA Listings
Attaining
Not Attaining (Category 4A)
Impaired (Category 5)
EPA Impaired
15050203
15050201
15050202
15080301
15080302
Willcox Playa
San Pedro River
Aravaipa Creek
Copper Creek
Double R Canyon
Ruehman Canyon
Hot Springs Canyon
Unnamed Trib. to Bass Canyon
Bass Canyon
Grant Creek
Ward Canyon
Turkey Creek
Rucker Canyon
Whitewater Draw
Babocomari River
Ramsey Canyon
Brewery Gulch
Mule Gulch
-001
-004C
-004B
-022A
-033A
-008
-002
-899B
-010A
-013
-935
-433
-002A
-288
-003
-006
-004
-337
-090A
-090B
-090C
-404A
Arizona's Watersheds
N
0 5 10 20 30 40 Miles
ADEQ
Arizona Department of Environmental Quality

ARAVAIPA CREEK From Stowe Gulch to end of Aravaipa Wilderness Area 15050203 – 004B 15.5 Miles Unique Water	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Attaining FBC – Attaining FC – Attaining AgL – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 02/28/2000 – 05/15/2002 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At east trail head SPARA019.41 100210	USGS Special study	5-8 dissolved and total metals: Antimony, arsenic, beryllium, barium, cadmium, chromium, copper, lead, nickel, silver, thallium, and zinc 8 total and 0-1 dissolved: Boron, manganese, mercury	11 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	10 *E. coli* bacteria 11 Fluoride 10 Total dissolved solids 11 Turbidity
Below Parsons Canyon SPARA017.25 100211	ADEQ Ambient USGS Special study			
At Hells Half Acre Campground SPARA011.92 100716	ADEQ TMDL			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Core parameters collected.		Lab detection limits for selenium and dissolved metals (lead, mercury, nickel) were higher than the A&W chronic criteria in at least 2 samples.
MONITORING RECOMMENDATIONS		Low Priority –Use lower lab detection limits for selenium and dissolved metals.	

ARAVAIPA CREEK From Aravaipa Wilderness Area to San Pedro River 15050203 – 004C 12.6 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Attaining FBC – Attaining FC – Attaining AgL – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 05/19/2000 – 04/06/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Woods Ranch SPARA010.19 100212	USGS Special study	7-9 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, and zinc 3-9 total and 0-1 dissolved: Boron, lead, manganese, mercury, nickel 1 total and 1 dissolved: Barium, silver, thallium	9 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	8 *E. coli* bacteria 9 Fluoride 9 Total dissolved solids 8 Suspended sediment concentration 9 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Core parameters collected.		Lab detection limits for selenium and dissolved metals (lead, mercury, and nickel) were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Use lower lab detection limits for selenium and dissolved metals.	

BABOCOMARI RIVER From Banning Creek to San Pedro River 15050202 – 004 32.7 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Attaining FBC – Attaining FC – Attaining AgL – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 01/28/2000 – 02/01/2006 Included 02/01/2006 data to be able to assess designated uses NUMBER AND TYPES OF SAMPLES Metals	Nutrients – Related	Other
Near Huachuca City, AZ USGS #09471380 SPBBR018.97 101487	USGS Special study	3 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, copper, lead, zinc 3 total metals only: Boron, chromium, manganese 3 total and 1 dissolved: Mercury 1 total: Selenium	3-4 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	3 *E. coli* bacteria 3 Fluoride 3 Total dissolved solids 3 Suspended sediment concentration 4 Turbidity
Near Tombstone, AZ USGS #09471400 SPBBR003.49 101488	ADEQ Ambient USGS Special study			
At mouth to San Pedro River SPBBR000.06 103548	ADEQ TMDL			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Core parameters collected.		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria in 2 samples.
MONITORING RECOMMENDATIONS		Low Priority –Use lower lab detection limits for selenium and dissolved mercury.	

BASS CANYON CREEK From unnamed tributary at 322606 / 1101318 to Hot Springs Canyon Creek 15050203 – 899B 7.9 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Attaining FBC – Attaining FC – Attaining AgL – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 03/01/2000 – 08/23/2000; 09/14/2004 – 04/19/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Double R Canyon SPBAS001.64 100215	ADEQ Ambient	6-7 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, copper, and zinc 3-7 total and 0-2 dissolved: Barium, boron, chromium, lead, manganese, mercury, nickel, silver, thallium	8 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	7 *E. coli* bacteria 8 Fluoride 8 Total dissolved solids 4 Suspended sediment concentration 8 Turbidity
Above Hot Springs Canyon Creek SPBAS000.62 100217	ADEQ Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	6.0 mg/L A&Ww	09/14/2004 – 2.66 mg/L	Attaining – Low dissolved oxygen due to natural conditions of low flow. Flow was 0.1 cfs. Low levels of nitrogen (0.13 mg/L) and phosphorus (0.01 mg/L).

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Core parameters collected.		Lab detection limits for selenium and dissolved metals (copper, lead, mercury) were higher than the A&W chronic criteria in at least 3 samples.
MONITORING RECOMMENDATIONS		Low Priority – Use lower lab detection limits for selenium and dissolved metals.	

UNNAMED BASS CANYON TRIBUTARY From headwaters to Bass Canyon Creek 15050203 – 935 1 Mile	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Attaining FBC – Attaining FC – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 09/16/2004 – 04/21/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
East of Bass Canyon SPUBS000.22 100224	ADEQ Ambient	4 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, lead, and zinc 3-7 total and 0-2 dissolved: Boron, manganese, mercury	3-4 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	4 *E. coli* bacteria 4 Fluoride 3 Total dissolved solids 4 Suspended sediment concentration 4 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	All core parameters collected.		Lab detection limits for selenium and half of the dissolved mercury samples were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority – Use lower lab detection limits for selenium and dissolved mercury.	

BREWERY GULCH From headwaters to Mule Gulch 15080301 -- 337 1 Mile	USE SUPPORT		OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	ADEQ	A&We – Impaired PBC – Inconclusive	Category 5 Impaired	Copper	ADEQ also assesses this reach as impaired by copper.
	EPA	A&We – Impaired	Category 5 Impaired	Copper	EPA listed in 2004 due to copper

Light blue highlights indicate EPA impairments based on EPA assessment and listing criteria. This listing may change when EPA reviews and approves the 2006/2008 impaired waters list. Such listings do not satisfy requirements established in ADEQ's Impaired Water Identification Rule; therefore, they are not included in the list of ADEQ's Impaired waters.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 03/07/2000 – 10/11/2000; 08/26/2003 – 09/27/2004 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above mineral zone SPBRG000.91 103439	ADEQ TMDL	6-7 dissolved metals: Cadmium, copper, lead, and zinc 3 total metals: Copper, zinc 2 total metals: Cadmium, lead 6 pH		
At old Bisbee storm drain SPBRG000.03 103441	ADEQ TMDL			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (dissolved)	6.3 µg/L at 20 mg/L hardness 10.2 µg/L at 41 mg/L hardness 8.5 µg/L at 35 mg/L hardness 31.3 µg/L at 88 mg/L hardness 20.6 µg/L at 137 mg/L hardness 10.5 µg/L at 43 mg/L hardness 18.4 µg/L at 78 mg/L hardness A&We acute	03/07/2000 – 81 µg/L 08/07/2000 – 150 µg/L 10/11/2000 – 26 µg/L 10/19/2000 – 52 µg/L 08/26/2003 – 65 µg/L 08/14/2004 – 25 µg/L 09/27/2004 – 30 µg/L	Impaired – Exceeded standard 3 times during a 3-year period (7 times during the assessment period).
Lead (dissolved)	51 µg/L at 41.5 mg/L hardness A&We acute	08/14/2004 – 380 µg/L	Inconclusive – 1 exceedance in the last 3 years of monitoring.
Lead (total)	15 µg/L PBC	08/14/2004 – 380 µg/L (d)	Inconclusive – 1 exceedance in 2 samples. (Binomial)
pH	>6.5 SU A&We , PBC	03/07/2000 – 6.2 SU	Inconclusive – Only 1 exceedance in 6 samples. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Lead and pH	Insufficient core parameters		
DISCUSSION OF EXCEEDANCES		EPA originally listed this reach as impaired by copper in 2004. In the current assessment ADEQ also lists it as impaired based on: 1. Seven exceedances during the assessment period; 2. Copper loadings from this tributary will be addressed in the Mule Gulch copper TMDL currently being developed; 3. Three exceedances in the last 3-year period.	
MONITORING RECOMMENDATIONS		High Priority –Collect copper, lead, and pH samples to support TMDL development on Mule Gulch as needed.	

BUEHMAN CANYON CREEK From headwaters to end of designated unique water 15050203 – 010A 10.5 Miles Unique Water	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Attaining FBC – Attaining FC – Attaining AgL – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 02/29/2000 – 05/01/2002; 11/08/2004 – 04/04/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below Bullock Canyon SPBHC004.66 100425	ADEQ Ambient	6-9 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, lead, and zinc 3-4 dissolved and total metals: Barium, nickel, silver, thallium 9 total and 0-1 dissolved: Boron, manganese, mercury	10 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	10 *E. coli* bacteria 10 Fluoride 10 Total dissolved solids 3 Suspended sediment concentration 10 Turbidity
Below unnamed dry wash SPBHC004.31 101175	ADEQ Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	6.0 mg/L A&Ww	05/16/2000 – 4.4 mg/L 08/22/2000 – 2.4 mg/L	Attaining – Low dissolved oxygen due to natural conditions of ground water upwelling during very low flows.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Core parameters collected.		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Use lower lab detection limits for selenium and dissolved mercury.	

COPPER CREEK From headwaters to Prospect Canyon 15050203 – 022A 6.6 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Attaining FC – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 02/29/2000 – 08/22/2000; 11/09/2004 – 09/21/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Bluebird Mine tributary SPCOP011.39 100433	ADEQ Ambient	4-7 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, lead, and zinc 4-6 total 0-2 dissolved: Barium, boron, manganese, mercury, nickel, silver, thallium	8 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	8 *E. coli* bacteria 8 Fluoride 8 Total dissolved solids 3 Suspended sediment concentration 8 Turbidity
Below Dark Canyon SPCOP008.37 100944	ADEQ Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (dissolved)	28.0 µg/L at 380 mg/L hardness A&Ww chronic	03/09/2005 – 31.1 µg/L	Inconclusive – Only 1 exceedance during the assessment period.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Dissolved copper	Core parameters collected.		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Medium Priority –Collect additional dissolved copper due to the exceedance. Use lower lab detection limits for selenium and dissolved mercury.	

DOUBLE R CANYON CREEK From headwaters to Bass Canyon Creek 15050203 – 902 5.0 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Attaining FBC – Attaining FC – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 05/22/2000 – 04/21/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Near Bass Canyon Creek SPDOU000.18 100223	ADEQ Ambient	5-9 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, lead, and zinc 9 total and 0-2 dissolved: Boron, manganese, mercury 2 total and 1-2 dissolved: Barium, nickel, silver, thallium	8-9 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	8 *E. coli* bacteria 8 Fluoride 8 Total dissolved solids 3 Suspended sediment concentration 8 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	6.0 mg/L A&Ww	05/22/2000 – 4.7 mg/L 06/09/2003 – 4.6 mg/L 09/15/2004 – 5.5 mg/L	Attaining – Low dissolved oxygen due to natural conditions of low flow and ground water upwelling. Flows between 0.02-0.06 cfs.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Core parameters collected.		Lab detection limits for selenium and dissolved metals (copper, lead, mercury) were higher than the A&W chronic criteria in at least 4 samples.
MONITORING RECOMMENDATIONS		Low Priority –Use lower lab detection limits for selenium and dissolved metals.	

DUBACHER CANYON From headwaters to Mule Gulch 15080301 -- 075 1 Mile	USE SUPPORT	OVERALL ASSESSMENT	
	A&We – Inconclusive PBC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 10/12/2000		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above mine area SPDBC000.42 102923	ADEQ TMDL	1 dissolved only: Cadmium, copper, lead, and zinc 1 pH		
Below Highway 80 at pit outfall SPDBC000.07 102924	ADEQ TMDL			

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (total)	1300 µg/L PBC	10/12/2000 – 36,000 µg/L (dissolved portion)	Inconclusive – Only 1 sample and it exceeded standards.
Copper (dissolved)	53.2 µg/L At 242 mg/L hardness A&We	10/12/2000 – 36,000 µg/L	Inconclusive – Only 1 sample and it exceeded standards.
pH	>6.5 SU A&We , PBC	10/12/2000 – 2.4 SU	Inconclusive – Only 1 sample and it exceeded standards.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Copper and pH	Insufficient core parameters	Insufficient sampling events	
DISCUSSION OF EXCEEDANCES		Samples were collected to support the Mule Gulch copper TMDL. Copper loadings from this tributary will be addressed in the Mule Gulch copper TMDL currently being developed.	
MONITORING RECOMMENDATIONS		High Priority – Collect additional copper and pH samples to support TMDL development on Mule Gulch as needed.	

GRANT CREEK	USE SUPPORT	OVERALL ASSESSMENT	
From headwaters to unnamed tributary at 323809 / 1095635 15050201 – 033A 6.8 Miles	A&Wc – Inconclusive FBC – Attaining FC – Attaining DWS – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 08/17/2004 – 06/14/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below Post Creek SPGRA007.71 100561	ADEQ Ambient	4 dissolved and total metals: Antimony, arsenic, beryllium. 4 total and 0-2 dissolved: Boron, cadmium, chromium, copper, lead, manganese, mercury, zinc	4 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	4 *E. coli* bacteria 4 Fluoride 4 Total dissolved solids 4 Suspended sediment concentration 4 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	7.0 mg/L A&Wc	08/17/2004 – 4.56 mg/L	Attaining -- Low dissolved oxygen due to natural conditions of low flow and ground water upwelling. Low nutrient levels (nitrogen 0.21 mg/L) and low flow (0. 09 cfs).

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient dissolved metals (cadmium, copper, zinc) to assess attainment of A&W.		Lab detection limits for dissolved metals (cadmium, copper, lead, mercury, and zinc) and total selenium were higher than the A&W chronic criteria in at least 2 samples.
MONITORING RECOMMENDATIONS		Low Priority –Collect missing core parameters to represent at least 3 seasons during an assessment period. Use lower lab detection limits for the dissolved metals and selenium.	

HENDRICKS GULCH From headwaters to Mule Gulch 15080301 -- 335 0.5 Mile	USE SUPPORT	OVERALL ASSESSMENT	
	A&We – Inconclusive PBC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 08/07/2000 – 08/27/2003		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At old Bisbee storm drain SPHNG000.01 102922	ADEQ TMDL	3-4 dissolved metals: Cadmium, copper, zinc 2 dissolved metals: Lead 1 total metals: Copper, zinc 4 pH	None	None

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (dissolved)	16 µg/L at 68 mg/L hardness 8.4 µg/L at 44 mg/L hardness A&We	08/07/2000 – 76 µg/L 08/27/2003 – 44 µg/L	Inconclusive – Only 1 exceedance in a 3-year period.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Copper	Insufficient core parameters	Insufficient sampling events	
DISCUSSION OF EXCEEDANCES		Samples were collected to support the Mule Gulch copper TMDL. Copper loadings from this tributary will be addressed in the Mule Gulch copper TMDL currently being developed.	
MONITORING RECOMMENDATIONS		High Priority –Collect copper samples to support TMDL development on Mule Gulch as needed.	

HOT SPRINGS CANYON	USE SUPPORT	OVERALL ASSESSMENT	
From headwaters to San Pedro River 15050203 – 013 25.9 Miles	A&Ww – Inconclusive FBC – Attaining FC – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	Sampling Periods: 03/01/2000 – 08/23/2000; 09/14/2004 – 04/19/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below Wildcat Canyon SPHSC010.67 100574	ADEQ Ambient	6-7 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, copper, and zinc 3-7 total and 0-2 dissolved metals: Barium, boron, chromium, lead, manganese, mercury, nickel, silver, and thallium.	8 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	7 *E. coli* bacteria 8 Fluoride 8 Total dissolved solids 4 Suspended sediment concentration 8 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (dissolved)	9.6 µg/L at 108 mg/L hardness A&Ww acute	04/19/2005 – 15 µg/L	Inconclusive – 1 exceedance in last 3-years of monitoring.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Copper	All core parameters were collected		Lab detection limits for selenium and dissolved metals (lead, mercury) samples were higher than the A&W chronic criteria in at least 4 samples.
MONITORING RECOMMENDATIONS		Medium Priority – Collect copper samples due to exceedance. Use lower lab detection limits for selenium and dissolved metals.	

LESLIE CREEK	USE SUPPORT	OVERALL ASSESSMENT	
From headwaters to Whitewater Draw 15080301-007 24.5 Miles	A&W2 – Inconclusive FBC – Inconclusive FC – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 05/16/2002; 08/18/2004 (other dates no flow) NUMBER AND TYPES OF SAMPLES Metals	Nutrients – Related	Other
At Leslie Canyon National Wilderness Area SPLES012.75 101500	ADEQ and USGS Ambient	1-2 dissolved and total metals: Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, and zinc 1 total metal only: Mercury 1 dissolved metal only: Selenium, uranium, barium	1-2 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	1 Fluoride 1 Total dissolved solids 1 Suspended sediment concentration 1 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	6.0 mg/L A&Ww	05/16/2002 – 4.5 mg/L 08/18/2004 – 2.6 mg/L	Inconclusive – Elevated nutrients on 05/26/2002 (nitrogen 6.2 mg/L, nitrate 26 mg/L) along with the low dissolved oxygen. Low dissolved oxygen on 08/18/2004 was due to natural conditions of low flow (flow 0.03 cfs) and ground water source of water. Low nutrients (nitrogen 1.03 mg/L, phosphorus 0.06 mg/L, nitrate 0.4 mg/L).

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Low dissolved oxygen (with elevated nutrients)	Insufficient core parameters	Insufficient sampling events	Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Medium Priority –Collect dissolved oxygen data due to low dissolved oxygen measurement. Collect core parameters to represent at least three seasons during an assessment period. Use lower lab detection limits for the selenium and dissolved mercury.	

MILLER CANYON From headwaters to Broken Arrow Ranch 15050202 – 409A 4.3 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Inconclusive FC – Inconclusive DWS – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATES: 02/23-2005; 03/30/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Near headquarters SPMLC012.43 100592	ADEQ Ambient	2 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, copper, lead, and zinc 3 total and 1 dissolved: Mercury 1-2 total metals only: Boron, chromium, manganese, selenium	3-4 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	3 *E. coli* bacteria 3 Fluoride 3 Total dissolved solids 3 Suspended sediment concentration 4 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	7.0 mg/L A&Wc	03/30/2005 – 5.2 mg/L	Attaining – Low dissolved oxygen due to natural conditions of low flow (0.5 cfs) and groundwater upwelling.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters.	Insufficient monitoring events	Lab detection limits for selenium and dissolved metal (lead and mercury) samples were higher than the A&W chronic criteria in at least 1 sample.
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least 3 seasons. Use lower lab detection limits for selenium and dissolved metals.	

MORALES CREEK From headwaters to Mule Gulch 15080301 – 331 2 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&We – Inconclusive PBC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 10/11/2000		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Highland Park Road SPMOR000.27 102937	ADEQ TMDL	1 dissolved: Cadmium, copper, lead, zinc 1 pH		

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (dissolved)	10.7 µg/L at 44 mg/L hardness A&We acute	10/11/2000 – 18 µg/L	Inconclusive – Exceeded criterion in the single sample tested.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Copper	Insufficient core parameters	Insufficient sampling events	
DISCUSSION OF EXCEEDANCES		Samples were collected to support the Mule Gulch copper TMDL. Copper loadings from this tributary will be addressed in the Mule Gulch copper TMDL currently being developed.	
MONITORING RECOMMENDATIONS		High Priority –Collect copper samples to support TMDL development on Mule Gulch as needed.	

MULE GULCH From headwaters to above Lavender Pit 15080301 – 090A 3 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Ww – Impaired PBC – Attaining FC – Attaining	Category 5 Impaired	Copper	Listed due to copper since 1990. Ongoing TMDL. Establishing site-specific copper standards.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 03/07/2000 – 08/28/2003 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below Spring Canyon SPMLG015.59 102773	ADEQ TMDL	12-19 dissolved and total metals: Copper, zinc 6-8 dissolved and 2 total: Cadmium, lead 1-2 dissolved and/or total metals: Antimony, arsenic, barium, beryllium, boron, chromium, manganese, mercury, nickel, silver, thallium, zinc	1 sample: Ammonia, dissolved oxygen, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen 15 pH	2 Fluoride 1 Turbidity
At Inn at Castle Rock SPMLG014.59 100506	ADEQ TMDL			
At MG - 100 SPMLG014.03 102489	ADEQ TMDL			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Cadmium (dissolved)	3.7 µg/L at 198 mg/L hardness 1.9 µg/L at 80 mg/L hardness A&Ww chronic	03/07/2000 – 7.4 µg/L 10/12/2000 – 21 µg/L	Inconclusive – Two exceedances of chronic standards during the assessment period; however, samples may not be representative of a four day condition, as they were collected during rain events.
Cadmium (dissolved)	3.4 µg/L at 80 mg/L hardness A&Ww acute	10/12/2000 – 21 µg/L	Inconclusive – Exceeded the acute standard once.
Copper (dissolved)	14.0 µg/L at 104 mg/L hardness 25.2 µg/L at 195 mg/L hardness 19.7 µg/L at 150 mg/L hardness 17.3 µg/L at 131 mg/L hardness 17.3 µg/L at 131 mg/L hardness 25.7 µg/L at 199 mg/L hardness 36.5 µg/L at 289 mg/L hardness 25.3 µg/L at 196 mg/L hardness 14.5 µg/L at 108 mg/L hardness 13.6 µg/L at 100 mg/L hardness A&Ww acute	03/07/2000 – 160 µg/L 08/08/2000 – 160 µg/L 08/18/2000 – 69 µg/L 10/12/2000 – 260 µg/L 10/07/2002 – 49 µg/L 12/01/2002 – 30 µg/L 01/08/2003 – 44 µg/L 07/20/2003 – 240 µg/L 08/13/2003 – 32 µg/L 08/26/2003 – 20 µg/L	Remains impaired – 6 exceedances during the last 3 years of monitoring (10 exceedances during the assessment period).

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Cadmium	Insufficient core parameters	Insufficient sampling events for core parameters	Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		High Priority – Collect samples to support copper TMDL and site specific copper standards. Collect additional cadmium samples due to exceedances. Use lower lab detection limits for selenium and dissolved mercury. Collect core parameters to represent at least 3 seasons.	

MULE GULCH From above Lavender Pit to Bisbee WWTP discharge 15080301 – 090B 0.8 Miles	USE SUPPORT		OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	ADEQ	A&We – Impaired PBC – Impaired	Category 5 Impaired	Copper	Ongoing copper TMDL. Establishing site-specific copper standards.
	EPA	A&We – Impaired PBC – Impaired	Category 5 Impaired	Low pH	EPA listed low pH in 2002. Ongoing copper TMDL will also address low pH.

Light blue highlights indicate EPA impairments based on EPA assessment and listing criteria. This listing may change when EPA reviews and approves the 2006/2008 impaired waters list. Such listings do not satisfy requirements established in ADEQ's Impaired Water Identification Rule; therefore, they are not included in the list of ADEQ's Impaired waters (Appendix B and Appendix C).

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 03/07/2000 – 08/26/2003 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Site MG 150 SPMLG012.79 102490	ADEQ TMDL	10 dissolved: Copper and zinc 6 total: Copper and zinc 2-3 dissolved: Cadmium, lead	5 pH	None

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (total)	1300 µg/L PBC	03/07/2000 – 4,000 µg/L 10/11/2000 – 4,000 µg/L 10/07/2002 – 39,000 µg/L 02/20/2003 – 16,725 µg/L 03/16/2003 – 21,000 µg/L 07/20/2003 – 19,200 µg/L 08/26/2003 – 13,000 µg/L	Remains impaired – Exceeded criterion during 7 of 7 sampling events (8 of 15 samples). (Binomial) (Note: dissolved copper results were compared to standards when total copper was not analyzed.)
Copper (dissolved)	41.0 µg/L at 182 mg/L hardness 36.2 µg/L at 161 mg/L hardness 40.5 µg/L at 182 mg/L hardness 85.9 µg/L at >400 mg/L hardness 41.5 µg/L at 185 mg/L hardness 63.0 µg/L at 288 mg/L hardness 85.9 µg/L at >400 mg/L hardness 85.9 µg/L at >400 mg/L hardness 85.9 µg/L at >400 mg/L hardness 61.3 µg/L at 287 mg/L hardness A&We acute	03/07/2000 – 4,000 µg/L 08/07/2000 – 42 µg/L 10/11/2000 – 4,000 µg/L 10/07/2002 – 40,000 µg/L 02/14/2003 – 67 µg/L 02/20/2003 – 28,000 µg/L 03/16/2003 – 21,000 µg/L 07/20/2003 – 34,000 µg/L 08/26/2003 – 15,000 µg/L	Remains impaired – Exceeded criteria 6 times in the last 3 years of monitoring (9 times during the assessment period).
Lead	15 µg/L PBC	10/11/2000 – 39 µg/L	Inconclusive – Exceeded in 1 of 2 samples. (Binomial)
pH	>6.5 SU A&We, PBC	03/07/2000 – 3.0 SU 08/07/2000 – 6.1 SU 10/11/2000 – 4.4 SU 02/20/2003 – 2.7 SU	Inconclusive – Did not meet criterion in 4 of 5 sampling events (4 of 9 samples); however, insufficient data to list as impaired. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	**MISSING CORE PARAMETERS**	**MISSING SEASONAL DISTRIBUTION**	**DETECTION LIMITS NOT LOW ENOUGH**
Lead	Insufficient core parameters	Insufficient sampling events for core parameters	
DISCUSSION OF LOW PH IMPAIRMENT		Evidence of potential pH impairment: 1. Very low pH during four of 5 sampling events; 2. Historic mining in the area is a probable source; and 3. ADEQ is currently developing a TMDL that should address low pH as well as copper loadings.	
MONITORING RECOMMENDATIONS		High Priority – Collect samples to support copper and pH TMDLs and site specific copper standards. Collect additional lead samples due to exceedances. Collect core parameters to represent at least 3 seasons during an assessment period.	

MULE GULCH From Bisbee WWTP discharge to Highway 80 bridge 15080301 – 090C 3.8 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Wedw – Impaired PBC – Impaired	Category 5 Impaired	Cadmium, copper, zinc, low pH	Ongoing TMDL. Establishing site-specific copper standards.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 03/06/2000 – 08/27/2003 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At MG-200 B (new) SPMLG010.61 102491	ADEQ TMDL	7-21 dissolved only: Copper, lead, and zinc 7-12 total only: Copper, cadmium, manganese, and zinc 1-2 total and 0-2 dissolved: Antimony, arsenic, barium, beryllium boron, chromium, lead, mercury, nickel, silver, thallium 16 pH (2 sites on 8 dates)	1sample: Ammonia, dissolved oxygen, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	2 Fluoride 2 Turbidity
Below Elfrida cutoff SPMUG007.81 100225	ADEQ TMDL			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Cadmium (dissolved)	11.7 µg/L at 254 mg/L hardness 17.1 µg/L at 363 mg/L hardness 8.5 µg/L at 193 mg/L hardness A&Wedw acute	03/07/2000 – 13 µg/L 10/11/2000 – 34 µg/L 12/19/2002 – 86 µg/L	Remains impaired – Exceeded three times during a 3-year period.
Copper (total)	1300 µg/L PBC	08/17/2000 – 3,490 µg/L (d) 10/11/2000 – 6,293 µg/L (d) 10/18/2000 – 1,400 µg/L 07/20/2003 – 8,538 µg/L 08/13/2003 – 2,254 µg/L 08/26/2003 – 2,218 µg/L	Remains impaired – Exceeded criteria 6 of 11 sampling events. (Binomial)
Copper (dissolved)	33.1 µg/L at 254 mg/L hardness 49.6 µg/L at >400 mg/L hardness 49.6 µg/L at >400 mg/L hardness 44.4 µg/L at 364 mg/L hardness 49.6 µg/L at >400 mg/L hardness 24.6 µg/L at 190 mg/L hardness 49.6 µg/L at >400 mg/L hardness 27.0 µg/L at 210 mg/L hardness 25.8 µg/L at 203 mg/L hardness 33.1 µg/L at 264 mg/L hardness 49.6 µg/L at >400 mg/L hardness 9.3 µg/L at 68 mg/L hardness 49.6 µg/L at >400 mg/L hardness A&Wedw acute	03/07/2000 – 70 µg/L 08/08/2000 – 160 µg/L 08/18/2000 – 12,000 µg/L 10/12/2000 – 8,400 µg/L 10/17/2002 – 490 µg/L 05/28/2002 – 25 µg/L 12/18/2002 – 87µg/L 02/08/2003 – 86 µg/L 02/21/2003 – 100 µg/L 03/06/2003 – 130 µg/L 07/20/2003 – 14,000 µg/L 08/13/2003 – 97 µg/L 08/26/2003 – 4,900 µg/L	Remains impaired – Exceeded criteria 9 times during the last 3 years of monitoring (13 times during the assessment period)
Lead (total)	15 µg/L FBC	10/12/2000 – 49.3 µg/L	Inconclusive – Exceeded during 1 of 3 sampling events (both sites). (Binomial)
Zinc (dissolved)	228 µg/L at 214 mg/L hardness	03/07/2000 – 310 µg/L	Remains impaired – Exceeded criteria 3 times

	379.3 µg/L at >400 mg/L hardness 379.3 µg/L at >400 mg/L hardness 286 µg/L at 287 mg/L hardness 379.3 µg/L at >400 mg/L hardness 379.3 µg/L at >400 mg/L hardness 379.3 µg/L at >400 mg/L hardness A&Wedw acute	08/08/2000 – 1,100 µg/L 08/18/2000 – 2,400 µg/L 10/12/2000 – 1,200 µg/L 10/17/2002 – 4,300 µg/L 07/20/2003 – 4,500 µg/L 08/26/2003 – 3,500 µg/L	during the last 3 years of monitoring (7 times during the assessment period).
pH	>6.5 SU A&Wedw, PBC	08/17/2000 – 2.8 SU 10/11/2000 – 2.8 SU 08/26/2003 – 5.8 SU	Remains impaired – Did not meet standards in 3 of 8 sampling events (at both sites). (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	**MISSING CORE PARAMETERS**	**MISSING SEASONAL DISTRIBUTION**	**DETECTION LIMITS NOT LOW ENOUGH**
Lead	Insufficient core parameters	Insufficient sampling events	Lab detection limits for selenium, dissolved mercury were higher than the surface water quality criteria.
MONITORING RECOMMENDATIONS		High Priority – Collect samples to support TMDLs and site specific copper standards. Collect additional lead samples due to exceedances. Use lower lab detection limits for selenium and dissolved mercury. Collect core parameters to represent at least 3 seasons during an assessment period.	

MULE GULCH From Highway 80 bridge to Whitewater Draw 15080301 – 090D 4.5 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&We – Inconclusive PBC – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 10/11/2000		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Elfrida cutoff road SPMLG005.79 102873	ADEQ TMDL	1 dissolved: Cadmium, copper, lead 1 pH		

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (total)	500 µg/L AgL	10/11/2000 – 5.500 (d)	Inconclusive – Exceeded criterion in the single sample tested. (Binomial)
Copper (total)	1300 µg/L PBC	10/11/2000 – 5.500 (d)	Inconclusive – Exceeded criterion in the single sample tested. (Binomial)
Copper (dissolved)	67 µg/L at 307 mg/L hardness A&We acute	10/11/2000 – 5.500	Inconclusive – Exceeded criterion in the single sample tested.
pH	>6.5 SU A&We, PBC, AgL	10/11/2000 – 4.2 SU	Inconclusive – Did not meet criteria in the single sample tested. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.
(d) Indicates that the sample result was really the dissolved portion only. Total copper concentration was probably higher.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Copper and pH	Insufficient core parameters	Insufficient sampling events for core parameters.	
DISCUSSION OF EXCEEDANCES		Samples were collected to support the Mule Gulch copper TMDL. Copper loadings from this tributary will be addressed in the Mule Gulch copper TMDL currently being developed.	
MONITORING RECOMMENDATIONS		High Priority –Collect copper and pH samples to support TMDL development. Collect core parameters to represent at least 3 seasons during an assessment period.	

MURAL HILL CANYON From headwaters to Mule Gulch 15080301 – 344 2.2 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&We – Inconclusive PBC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATES: 10/11/2000; 08/14/2004		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Highway 80 SPMHC000.09 103440	ADEQ TMDL	2 dissolved: Cadmium, copper, lead and zinc 1 total: Copper, lead and zinc 1 pH		

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (total)	1300 µg/L PBC	10/11/2000 – 1400 µg/L	Inconclusive – Did not meet criterion in the single sample tested. (Binomial)
Copper (dissolved)	8.4 µg/L at 34 mg/L hardness A&We acute	10/11/2000 – 15 µg/L	Inconclusive – Exceeded criterion in 1 of 2 samples (once in a 3-year period).
Lead (total)	15 µg/L PBC	08/14/2004 – 470 µg/L	Inconclusive – Exceeded criterion in the one sample tested. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Copper and lead	Insufficient core parameters	Insufficient sampling events for core parameters.	
DISCUSSION OF EXCEEDANCES		Samples were collected to support the Mule Gulch copper TMDL. Copper loadings from this tributary will be addressed in the Mule Gulch copper TMDL currently being developed.	
MONITORING RECOMMENDATIONS		High Priority –Collect copper samples to support TMDL development on Mule Gulch as needed Collect lead samples due to the exceedance.	

RAMSEY CANYON CREEK From headwaters to Forest Road 110 15050202 – 404A 4.4 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Attaining FC – Attaining AgI – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	Sampling Periods: 01/26/2000 – 7/12/2000; 12/16/2004 – 06/02/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Nature Conservancy buildings SPRMC011.48 100625	ADEQ Ambient	5-6 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, copper, lead, mercury, zinc 6 total 0-1 dissolved metals: Boron, chromium, manganese 2-1 dissolved and total: Barium, nickel, silver, thallium.	7 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	7 *E. coli* bacteria 7 Fluoride 7 Total dissolved solids 4 Suspended sediment concentration 7 Turbidity
At Box Canyon SPRMC011.11 101060	ADEQ Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Mercury (dissolved)	0.01 µg/L A&Wc chronic	02/23/2005 – 0.055 µg/L	Inconclusive – Only 1 exceedance during the assessment period. Lab detection limit for other samples was higher than the standard so could not be used to assess attainment.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Collected all core parameters		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Medium Priority – Collect additional dissolved mercury samples due to exceedance. Use lower lab detection limits for selenium and dissolved mercury.	

REDFIELD CANYON CREEK From tributary at 323339 / 1101841 to San Pedro River 15050203 – 014B 32.5 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 04/20/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below Sycamore Canyon SPRDC012.76 100628	ADEQ Ambient	1 dissolved and total metals: Antimony, arsenic, barium, beryllium, chromium, zinc 1 total metal only: Boron, copper, lead, mercury, manganese	1 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	1 *E. coli* bacteria 1 Fluoride 1 Total dissolved solids 1 Suspended sediment concentration 1 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	Lab detection limits for selenium and dissolved metals (copper, lead, mercury) were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least three seasons during an assessment period. Use lower lab detection limits for the dissolved metals and selenium.	

RIGGS FLAT LAKE 15050201 – 1210 9.2 Acres	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Inconclusive FC – Inconclusive AgI – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 08/11/2003		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Dam SPRIG-A 100074	ADEQ Ambient	1 dissolved and total metals: Antimony, arsenic, barium, beryllium, boron, chromium, manganese, mercury, zinc 1 total metal only: Cadmium, copper, lead, mercury, silver	1 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	1 Fluoride 1 Total dissolved solids 1 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	7.0 mg/L A&Ww	08/11/03 – 6.4 mg/L	Attaining -- Low dissolved oxygen due to natural conditions of groundwater upwelling. Low nutrient levels.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	Lab detection limits for dissolved metals (cadmium, copper, lead, mercury, and silver) were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least 3 seasons during an assessment period. Use lower lab detection limits for the dissolved metals.	

RUCKER CANYON CREEK	USE SUPPORT	OVERALL ASSESSMENT	
From headwaters to Whitewater Draw 15080301-288 10.4 Miles	A&Wc – Inconclusive FBC – Attaining FC – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 01/25/2000 – 06/16/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above Campground SPRUC007.81 100938	ADEQ Ambient	5-6 dissolved and total metals: Antimony, arsenic, beryllium, copper, lead. 6 total and 0-2 dissolved: Boron, cadmium, chromium, manganese, mercury, zinc 1-2 total and dissolved: Barium, silver, thallium	7 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	5 *E. coli* bacteria 7 Fluoride 7 Total dissolved solids 4 Suspended sediment concentration 7 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	7.0 mg/L A&Ww	06/01/2000 – 6.4 mg/L 06/16/2005 – 5.5 mg/L	Attaining -- Low dissolved oxygen due to natural conditions of low flow and ground water upwelling. Low nutrient levels. Flow 0.03-0.07 cfs. Very low nutrients (nitrogen 0.03-0.07 mg/L).

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient dissolved metals (cadmium, copper, zinc) to assess A&W.		Lab detection limits for dissolved metals (cadmium, copper, lead, mercury, zinc) and total selenium were higher than the A&W chronic criteria in at least 2 samples.
MONITORING RECOMMENDATIONS		Low Priority –Collect missing core parameters to represent at least 3 seasons during an assessment period. Use lower lab detection limits for the dissolved metals and selenium.	

SAN PEDRO RIVER From Mexico border to Charleston 15050202 – 008 28.3 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Ww – Attaining FBC – Inconclusive FC – Attaining AgI – Attaining AgL – Attaining	Category 2 Attaining some uses		Copper added in 2004. Remove from list – attaining standards.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 01/12/2000 – 03/30/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Palominas Transect USGS #09470490 SPSPR151.28 101485	USGS Ambient	8-18 dissolved and total metals: Antimony, arsenic, barium, beryllium, chromium, cadmium, copper, lead, manganese, nickel, silver, thallium, and zinc 17 total metals 0-2 dissolved: Boron, mercury 2 Selenium	16-17 samples: Ammonia, 48-73 Dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	16 *E. coli* bacteria 15 Fluoride 16 Total dissolved solids 22 Turbidity
At Palominas, AZ USGS 09470500 SPSPR150.09 100275	USGS Ambient			
Near Hereford Road SPSPR144.76 101497	USGS Special study			
Above Highway 90 SPSPR134.35 100288	ADEQ Ambient			
At Route 90, near Lewis Springs SPSPR134.32 101499	USGS Special study			
At Charleston, AZ USGS 09471000 SPSPR127.50 100291	USGS Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Arsenic	50 µg/L FBC	07/17/2001 – 86 µg/L	Attaining – Only 1 exceedance in 17 samples. (Binomial)
Copper (dissolved)	6.8 µg/L at 49 mg/L hardness A&Ww acute	07/17/2001 – 21 µg/L	Attaining – 0 exceedance during the last 3-years of monitoring (last exceedance in 2001)
Copper (total)	500 µg/L AgL	07/17/2001 – 1200 µg/L 08/19/2004 – 953 µg/L	Attaining – 2 exceedances in 17 samples. (Binomial)
Dissolved oxygen	6.0 mg/L A&Ww	06/19/2000 – 5.2 mg/L 09/17/2002 – 4.1 mg/L	Attaining – Only 1 sample did not meet standard in 68 samples. (Binomial) Other sample (one on 09/17/2002) was due to natural conditions (flow 0.021 cfs).
E. coli bacteria	235 CFU/100 ml FBC	04/14/2004 – 2,320 CFU/100 ml 08/19/2004 – 35,000 CFU/100 ml	Inconclusive – 2 exceedances within the last 3 years of monitoring. One of these was during a flood flow -- 201 cfs – when surface water bacterial contamination is naturally very high. (See discussion below)
Lead	15 µg/L FBC	07/17/2001 – 230 µg/L 08/19/2004 – 230 µg/L	Attaining – 2 exceedances in 17 samples. (Binomial)
Mercury (dissolved)	0.01 µg/L A&Ww chronic	07/17/2001 – 0.57 µg/L	Inconclusive – Only 1 exceedance during the assessment period.

Suspended sediment concentration (SSC)	Geometric mean 80 mg/L	06/19/2000 – 1250 mg/L – 10 cfs 07/12/2000 – 147 mg/L – 8.3 cfs 10/26/2000 – 430 mg/L – 283 cfs* 08/14/2002 – 240 mg/L – 13 cfs 07/30/2003 – 1880 mg/L – 14 cfs 07/15/2004 – 138 mg/L – 0.6 cfs 08/19/2004 – 6830 mg/L – 201 cfs*	Inconclusive – 7 of 54 samples exceeded the 80 mg/L criterion. Two of the exceedances (*) and 10 other samples were not included in the geometric mean calculation, because flows were above the 50 Percentile of recorded flow. Using the remaining samples, the geometric mean did not exceed 80 mg/L.
Selenium	2.0 µg/L A&Ww chronic	07/17/2001 – 5 µg/L	Inconclusive – Only one of exceedance in the last 3 years of monitoring.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
E. coli bacteria, mercury, selenium, and suspended sediment concentration	Core parameters collected.		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
BACTERIA CONTAMINATION DISCUSSION		One of the 2 *E. coli* bacteria exceedances occurred during flood flow (200 cfs). Further monitoring is needed to determine whether bacterial contamination is solely due to natural conditions associated with such runoff events.	
MONITORING RECOMMENDATIONS		High Priority – Collect copper samples to support TMDL development. Collect additional *E. coli* bacteria, SSC, and selenium samples due to exceedances. Recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted. Use lower lab detection limits for selenium and dissolved mercury.	

SAN PEDRO RIVER From Charleston to Walnut Gulch 15050202 – 006 8.9 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Attaining FBC – Attaining FC – Attaining AgI – Attaining AgL – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 01/26/2000 – 06/10/2003 Included *E. coli* samples at 2 TMDL sites collected 02/01/2006 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below Graveyard Gulch SPSPR126.35 100653	ADEQ Ambient	5-6 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, zinc 3-6 total and 0-2 dissolved: Barium, boron, lead, mercury, manganese, nickel, silver, thallium	7-9 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	8 *E. coli* bacteria 7 Fluoride 7 Total dissolved solids 4 Suspended sediment concentration 10 Turbidity
Above Boquillas Ranch SPSPR120.47 104005	ADEQ TMDL			
At Fairbanks, AZ SPSPR117.97 100287	ADEQ TMDL			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Core parameters collected.		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Use lower lab detection limits for selenium and dissolved mercury.	

SAN PEDRO RIVER From Babocomari Creek to Dragoon Wash 15050202 – 003 17.0 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Ww – Attaining FBC – Impaired FC – Attaining AgI – Attaining AgL – Attaining	Category 5 Impaired	*E. coli* bacteria	Listed in 2004 due to 2 *E. coli* bacteria exceedances.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 01/26/2000 – 08/03/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
16 sites along this segment.	Hargis and Associates Effectiveness monitoring	4-5 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, copper, lead, zinc 4-5 total and 0-1 dissolved: Boron, chromium, manganese, mercury 1-2 dissolved and total metals: Barium, nickel, silver, thallium,	6-9 samples: Ammonia, pH, dissolved oxygen, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen 59 Nitrate samples	6 *E. coli* bacteria 6 Fluoride 8 Total dissolved solids 3 Suspended sediment concentration 4 Turbidity
Near Tombstone, AZ SPSPR115.90 101490	USGS Ambient			
At Escalante Crossing SPSPR105.49 103674	ADEQ Ambient			
0.8 miles south of Highway 80 SPSPR102.01 100281	ADEQ Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
E. coli bacteria	235 CFU/100 ml FBC	04/26/2000 – 310 CFU/100 ml 07/13/2000 – 660 CFU/100 ml	Remains impaired – Two exceedances during this assessment period. (2 of 6 samples). Exceedances were during normal/low flows.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Core parameters were collected		Lab detection limit for selenium and dissolved mercury was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		High Priority – Collect *E. coli* bacteria samples in support of TMDL development. Continue to collect nitrate samples to determine effectiveness of water quality improvement actions at the Apache Nitrogen Superfund cleanup site upstream. Use a lower lab detection limit for selenium and dissolved mercury samples.	

SAN PEDRO RIVER From Dragoon Wash to Tres Alamos Wash 15050202 – 002 15.5 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Ww – Impaired FBC – Inconclusive FC – Inconclusive AgI – Inconclusive AgL – Inconclusive	Category 5 Impaired	Nitrate	Listed due to nitrate since 1990.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 06/21/2001 – 02/01/2006		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Mid Apache Nitrogen Contamination Area SPSPR102.18 103660	Hargis and Associates Effectiveness monitoring	2 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, copper, lead, mercury, zinc 1 total metal only: Boron, chromium, manganese	3-4 samples: Ammonia, pH, dissolved oxygen 2 Total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	2 *E. coli* bacteria 2 Fluoride 2 Total dissolved solids 2 Suspended sediment concentration 2 Turbidity
North of Highway 80 SPSPR101.25 100276	ADEQ Ambient			
Below Dragoon Wash SPSPR101.10 102712	ADEQ Ambient			
Apache Nitrogen Contamination Area SPSPR100.16 103662	Hargis and Associates Effectiveness monitoring			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
E. coli bacteria	235 CFU/100 ml FBC	02/01/2006 – 579 CFU/100 ml	Inconclusive – Only 1 exceedance during this assessment period.
Lead	15 µg/L FBC	02/15/2005 – 20 µg/L	Inconclusive – Only 1 exceedance (only 1 sample tested for total lead) (Binomial)
Mercury (dissolved)	0.01 µg/L A&Ww chronic	02/15/2005 – 0.0104 µg/L	Inconclusive – Only 1 exceedance during the assessment period.
Nitrate	Site specific standard of 10 mg/L A&Ww	10/15/2001 – 24 mg/L 06/21/2001 – 34 mg/L 05/02/2002 – 38 mg/L 08/21/2002 – 44 mg/L 11/21/2002 – 53 mg/L 02/12/2003 – 29 mg/L 05/22/2003 – 51 mg/L 08/06/2003 – 27 mg/L 05/26/2004 – 14 mg/L 05/09/2005 – 24 mg/L 02/01/2006 – 27 mg/L	Remains impaired -- Exceeded criteria in 11 of 16 samples.
Suspended sediment concentration (SSC)	Geometric mean 80 mg/L A&Ww	02/15/2005 – 482 mg/L	Inconclusive – Exceeded criterion of 80 mg/L in 1 of 2 samples, but flow (at 22 cfs) above 90% of flow (about 11 cfs), so value could not be used to calculate the geometric mean. Insufficient samples to calculate the geometric mean.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	**MISSING CORE PARAMETERS**	**MISSING SEASONAL DISTRIBUTION**	**DETECTION LIMITS NOT LOW ENOUGH**
E. coli bacteria, lead, suspended sediment concentration.	Insufficient core parameters	Insufficient sampling events	Lab detection limit for selenium was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		High Priority –Continue to collect nitrate samples to determine effectiveness of water quality improvement actions at the Apache Nitrogen Superfund cleanup site. Collect additional *E. coli* bacteria, lead, and suspended sediment concentration samples due to the exceedances. Recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted. Collect core parameters to represent at least three seasons during an assessment period. Use lower lab detection limits for the selenium.	

SAN PEDRO RIVER From HUC boundary 15050202 to Hot Springs Canyon Creek 15050203 -- 012 17.1 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive AgI -- Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 10/20/2003 – 11/29/2004		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
3 Links – River camp SPSPR075.41 102391	319 Grant/ADEQ Effectiveness monitoring		7 samples: pH, dissolved oxygen 3 samples: total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	1 *E. coli* bacteria 4 Total dissolved solids 5 Turbidity
3 Links – North field SPSPR074.25 102390	319 Grant/ADEQ Effectiveness monitoring			
3 Links – Upstream crossing SPSPR072.40 102389	319 Grant/ADEQ Effectiveness monitoring			
3 Links – 5 Gap SPSPR071.62 102388	319 Grant/ADEQ Effectiveness monitoring			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Samples represent 3 seasons.	
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least 3 seasons. The old turbidity standard (50 NTU) was exceeded in one sample on 04/12/2004 at 74 NTU. Suspended sediment concentration samples should be collected to determine if the new SSC criterion is being met. Recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted.	

SAN PEDRO RIVER From Hot Springs Canyon Creek to Redfield Canyon 15050203 -- 011 16.0 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Attaining AgI – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 03/02/2000 – 04/05/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Cascabel, AZ SPSPR059.21 100289	ADEQ Ambient	5-16 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, nickel, mercury, silver, thallium, and zinc 14-16 total metal 0-1 dissolved: Boron, manganese, mercury	16 samples: Ammonia, pH, dissolved oxygen, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	15 *E. coli* bacteria 17 Fluoride 18 Total dissolved solids 10 Suspended sediment concentration 18 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Chromium	100 µg/L FBC	08/19/2004 – 240 µg/L	Attaining – Exceeded criterion in 1 of 16 samples. (Binomial)
Copper	500 µg/L AgL	08/19/2004 – 900 µg/L	Attaining – Exceeded criterion in 1 of 16 samples. (Binomial)
Copper (dissolved)	22.9 µg/L At 300 mg/L hardness A&Ww Acute	04/05/2005 – 25 µg/L	Inconclusive – Only 1 exceedance in 3-year period. (1 of 4 samples.)
Dissolved oxygen	6.0 mg/L A&Ww	08/23/2000 – 5.6 mg/L	Attaining – Only 1 exceedance in 18 samples. (Binomial) Exceedance occurred during flood flow with extremely high total nitrogen (65 mg/L) and high phosphorus (22 mg/L) reported.
E. coli bacteria	235 CFU/100 ml FBC	08/23/2000 – 16,000 CFU/100 ml 08/19/2004 – 1,000 CFU/100 ml	Inconclusive – Two exceedances within the assessment period, but both occurred during extreme flood flows. (See further discussion below.)
Lead	15 µg/L FBC	08/19/2004 – 620 µg/L	Attaining – Only 1 exceedances in 15 samples. (Binomial)
Lead	100 µg/L AgL	08/19/2004 – 620 µg/L	Attaining – Only 1 exceedance in 15 samples. (Binomial)
Manganese	10,000 µg/L AgI	08/19/2004 – 15,000 µg/L	Attaining – Only 1 exceedance in15 samples. (Binomial)
Suspended sediment concentration (SSC)	Geometric mean 80 mg/L A&Ww	08/17/2004 – 16,880 mg/L	Attaining – Exceeded criterion of 80 mg/L in 1 of 10 samples. Sample was collected during flood flow, so result was not included in geometric mean calculation. Therefore, geometric mean standard was not exceeded. The magnitude of the sediment concentration suggests that sediment may be an issue in this drainage.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	**MISSING CORE PARAMETERS**	**MISSING SEASONAL DISTRIBUTION**	**DETECTION LIMITS NOT LOW ENOUGH**
Dissolved copper and *E. coli* bacteria.	All core parameters were collected		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
BACTERIA CONTAMINATION DISCUSSION		The two bacteria exceedances occurred during flood flows (27 cfs and 66 cfs). Further monitoring is needed to determine whether bacterial contamination is solely due to natural conditions associated with such runoff events.	
MONITORING RECOMMENDATIONS		Medium Priority –Collect additional dissolved copper and *E. coli* bacteria due to the exceedances. Use lower lab detection limits for the selenium and dissolved mercury. Recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted, due to high levels of suspended sediment during flood flows.	

SAN PEDRO RIVER From Buehman Wash to Peppersauce Wash 15050203 -- 008 16.4 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Attaining AgL – Inconclusive	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 01/15/2004 – 04/06/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Valley Road near San Manuel SPSPR035.01 100285	ADEQ Ambient	3-5 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, zinc 5 total and 0-1 dissolved: Boron, manganese, mercury	4 samples: Ammonia, pH, dissolved oxygen, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	4 *E. coli* bacteria 4 Fluoride 4 Total dissolved solids 4 Suspended sediment concentration 4 Turbidity
Near San Manuel SPSPR034.66 101843	ADEQ TMDL			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Chromium	100 µg/L FBC	08/17/2004 – 210 µg/L	Inconclusive -- Exceeded criterion in 1 of 4 samples. (Binomial)
Copper	500 µg/L AgL	08/17/2004 – 1100 µg/L	Inconclusive – Exceeded criterion in 1 of 3 samples. (Binomial)
Copper (dissolved)	9.5 µg/L At 69 mg/L hardness A&Ww Acute	01/05/2005 – 11 µg/L	Inconclusive – Only 1 exceedance in 3-year period. (1 of 4 samples.)
E. coli bacteria	235 CFU/100 ml FBC	08/17/2005 – 4000 CFU/100 ml	Inconclusive – Only 1 exceedance during this assessment period. (Occurred during flood flow)
Lead	15 µg/L FBC	08/17/2004 – 620 µg/L 01/05/2005 – 53 µg/L	Inconclusive – Only 2 exceedances in 4 samples (Binomial requires a minimum of 5 exceedances and 20 samples to list as impaired).
Lead	100 µg/L AgL	08/17/2004 – 620 µg/L	Inconclusive – Only 1 exceedance in 4 samples. (Binomial)
Suspended sediment concentration (SSC)	Geometric mean 80 mg/L A&Ww	08/17/2004 – 46,400 mg/L	Inconclusive – Exceeded criterion of 80 mg/L in 1 of 4 samples. However, sample was collected during flood flow, so result was not used to calculate a geometric mean. Insufficient samples left to calculate the geometric mean. Magnitude of the sediment concentration suggests that sediment may be an issue in this drainage.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	**MISSING CORE PARAMETERS**	**MISSING SEASONAL DISTRIBUTION**	**DETECTION LIMITS NOT LOW ENOUGH**
Chromium, copper, *E. coli* bacteria, lead, and suspended sediment concentration.	All core parameters were collected		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Medium Priority –Collect additional chromium, copper, *E. coli*, lead, and suspended sediment samples due to the exceedances. Use lower lab detection limits for the selenium and dissolved mercury. Recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted, due to high levels of suspended sediment during flood flows.	

SAN PEDRO RIVER From Peppersauce Wash to Arivaipa Creek 15050203 – 003 21.3 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive AgI – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 01/05/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Mammoth SPSPR023.77 103481	ADEQ TMDL	1 dissolved and total metals: Antimony, arsenic, beryllium, boron, chromium, cadmium, copper, lead, manganese, and zinc 1 total metals only: Mercury	1 Ammonia, nitrite/nitrate.	

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (dissolved)	9.6 µg/L at 70 mg/L hardness A&Ww acute	01/05/2005 – 16 µg/L	Inconclusive – Only sample exceedance in 3 year period.
Lead	15 µg/L FBC	01/05/2005 – 84 µg/L	Inconclusive – Exceeded lead criterion in only sample analyzed for lead.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Dissolved copper and total lead.	Insufficient core parameters	Insufficient samples	Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Medium Priority –Collect additional lead and dissolved copper samples due to exceedances. Collect core parameters to represent at least 3 seasons during an assessment period. Use lower lab detection limits for selenium and dissolved mercury.	

SAN PEDRO RIVER From Aravaipa Creek to Gila River 15050203 – 001 14.8 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Ww – Impaired FBC – Impaired FC – Attaining AgI – Attaining AgL – Attaining	Category 5 Impaired	*E. coli* bacteria and selenium	*E. coli* bacteria and selenium added in 2004

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 02/28/2000 – 04/06/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below Eskiminzin Wash SPSPR005.28 100726	ADEQ Ambient	12-18 dissolved and total metals: Antimony, arsenic, beryllium, chromium, cadmium, copper, lead, and zinc 16-17 total metals 0-2 dissolved: Boron, manganese, mercury, and selenium 5-6 total and dissolved: Barium, silver, thallium, nickel	17-19 samples: Ammonia, 48-73 Dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	18 *E. coli* bacteria 19 Fluoride 18 Total dissolved solids 8 Suspended sediment concentration 18 Turbidity
Above Roach Wash SPSPR003.85 101348	ADEQ Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Arsenic	50 µg/L FBC	01/10/2001 – 63 µg/L	Attaining – Only 1 exceedance in 17 samples. (Binomial)
Chromium	100 µg/L FBC	08/16/2004 – 350 µg/L	Attaining – Only 1 exceedance in 17 samples. (Binomial)
Copper (total)	500 µg/L AgL	08/16/2004 – 930 µg/L	Attaining – Only 1 exceedance in 16 total copper samples. (Binomial)
E. coli bacteria	235 CFU/100 ml FBC	08/21/2000 – 600 CFU/100 ml 01/10/2001 – 3636 CFU/100 ml 09/10/2003 – 740 CFU/100 ml 01/15/2004 – 740 CFU/100 ml 08/16/2004 – 4100 CFU/100 ml	Remains impaired – 4 exceedances within the last 3 years of monitoring. (5 exceedances within the assessment period)
Lead	15 µg/L – FBC 100 µg/L – AgL	01/10/2001 – 140 µg/L 09/10/2003 – 42 µg/L 08/16/2004 – 980 µg/L	Attaining – Only 3 exceedances in 16 samples. (Binomial method requires a minimum of 5 exceedances and 20 samples to assess as impaired.)
Mercury	0.6 µg/L FC	04/17/2001 – 0.67 µg/L	Attaining – Only 1 of 16 samples exceeded the standard (Binomial)
Mercury (dissolved)	0.01 µg/L A&Ww chronic	04/17/2001 – 0.46 µg/L	Inconclusive – One exceedance during the assessment period.
Suspended sediment concentration (SSC)	Geometric mean 80 mg/L	09/10/2003 – 664 mg/L – 6.9 cfs 08/16/2004 – 29,000 mg/L – 54 cfs*	Inconclusive – 2 of 8 samples exceeded 80 mg/L criteria. One of those could not be included in the geometric mean calculation, because it occurred during high flow event (*). Using the remaining samples, the geometric mean standard was not exceeded.
Selenium	2.0 µg/L A&Ww chronic	01/10/2001 – 11 µg/L	Remains impaired – Because of lab detection limits, only 1 sample could be used for this assessment, and that one exceeded the selenium criterion by a high magnitude.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	**MISSING CORE PARAMETERS**	**MISSING SEASONAL DISTRIBUTION**	**DETECTION LIMITS NOT LOW ENOUGH**
Suspended sediment concentration and dissolved mercury	Core parameters collected.		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		High Priority – Collect *E. coli* bacteria and selenium samples to support TMDL development. Collect additional SSC and dissolved mercury samples due to exceedances. Very high suspended sediment concentrations indicate excessive sediment transport in this drainage. Recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted. (The old turbidity criterion (50 NTU) was exceeded in 4 of 18 samples (1000 to 7267 NTU).) Use lower lab detection limits for selenium and dissolved mercury.	

SNOW FLAT LAKE 15050201 – 1420 0.5 Acres	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Inconclusive FC – Inconclusive AgI – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 08/11/2003 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Dam SPSNO-A 100084	ADEQ Ambient	1 dissolved and total metals: Antimony, arsenic, barium, beryllium, boron, chromium, copper, lead, manganese, mercury, zinc 1 total metals only: Cadmium, copper, mercury, silver	1 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	1 Fluoride 1 Total dissolved solids 1 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	Lab detection limits for dissolved metals (cadmium, copper, lead, mercury and silver) were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least three seasons during an assessment period. Use lower lab detection limits for the dissolved metals.	

SPRING CREEK From headwaters to Mule Gulch 15080301 – 333 1 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&We – Inconclusive PBC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 10/11/2000		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Highway 80 SPSPC000.11 102921	ADEQ TMDL	1 dissolved: Cadmium, copper, lead, zinc 1 pH		

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (dissolved)	16 µg/L at 68 mg/L hardness 8.4 µg/L at 35 mg/L hardness A&We acute	08/07/2000 – 76 mg/L 08/27/2003 – 44 mg/L	Inconclusive – Exceeded twice during the assessment period, but only once in a 3-year period.
pH	>6.5 SU A&We and PBC	08/07/2000 – 5.7 SU	Inconclusive – 1 of 4 samples did not meet standards. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Copper and low pH	Insufficient core parameters	Insufficient sampling events for core parameters, as only 2 seasons were represented.	
DISCUSSION OF EXCEEDANCES		Samples were collected to support the Mule Gulch copper TMDL. Copper loadings from this tributary will be addressed in the Mule Gulch copper TMDL currently being developed.	
MONITORING RECOMMENDATIONS		Medium Priority –Collect additional copper and pH samples due to exceedances and to support TMDL development on Mule Gulch as needed.	

TURKEY CREEK	USE SUPPORT	OVERALL ASSESSMENT	
From headwaters to Rock Creek 15050201 – 002A 13.1 Miles	A&Wc – Inconclusive FBC – Attaining FC – Attaining AgI – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 08/17/2004 – 06/16/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above upper campground SPTUR028.53 102113	ADEQ Ambient	4 dissolved and total metals: Antimony, arsenic, beryllium. 4 total and 0-2 dissolved: Boron, cadmium, chromium, copper, lead, manganese, mercury, zinc	4 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	4 *E. coli* bacteria 4 Fluoride 4 Total dissolved solids 4 Suspended sediment concentration 4 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	7.0 mg/L A&Ww	06/15/2005 – 3.24 mg/L	Attaining – Low dissolved oxygen due to natural conditions of low flow and ground water upwelling. Low nutrient levels (nitrogen – 0.5 mg/L, phosphorus = >0.02 mg/L). Low flow =0.1 cfs.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient dissolved metals (cadmium, copper, zinc) to assess A&W.		Lab detection limits for dissolved metals (cadmium, copper, lead, mercury, zinc) and total selenium were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Collect missing core parameters to represent at least 3 seasons during an assessment period. Use lower lab detection limits for the dissolved metals and selenium.	

TWIN POND In San Bernardino National Refuge 15080302 – 0001 1 Acre	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Inconclusive FC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 05/16/2002		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Dam SPTWP-USGS 101581	USGS Ambient	1 dissolved metals only: Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, lead, silver, uranium and zinc	1 sample: Dissolved oxygen and pH (Nutrients were dissolved portion only)	1 Total dissolved solids 1 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least three seasons during an assessment period.	

WARD CANYON From headwaters to Turkey Creek 15050201 – 433 3.0 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Attaining FC – Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 08/17/2004 – 06/15/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below Saulsbury Canyon SPWRC000.09 102892	ADEQ Ambient	4 dissolved and total metals: Antimony, arsenic, beryllium. 4 total and 0-2 dissolved: Boron, cadmium, chromium, copper, lead, manganese, mercury, zinc	4 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	4 *E. coli* bacteria 4 Fluoride 4 Total dissolved solids 4 Suspended sediment concentration 4 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	7.0 mg/L A&Ww	06/15/2005 – 6.0 mg/L	Attaining – Low dissolved oxygen due to natural conditions of low flow and ground water upwelling. Low nutrient levels. Flow 0.01 cfs.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient dissolved metals (cadmium, copper, zinc) to assess A&W.		Lab detection limits for dissolved metals (cadmium, copper, lead, mercury, zinc) and total selenium were higher than the A&W chronic criteria in at least 2 samples.
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least 3 seasons during an assessment period. Use lower lab detection limits for the dissolved metals and selenium.	

WHITEWATER DRAW Gadwell Canyon to unnamed reach # 15080301-003 15080301 -- 004 22.2 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Inconclusive FC – Inconclusive AgI – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 10/11/2000		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Double Adobe Bridge SPWHD015.66 100230	ADEQ TMDL	1 dissolved and total metals: Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, manganese, mercury, nickel, silver, thallium, and zinc	1 samples pH	1 Fluoride 1 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	Lab detection limits for lead, dissolved lead, and selenium were higher than the criteria.
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least three seasons during an assessment period. Use lower lab detection limits for the lead (including dissolved lead) and selenium.	

WHITEWATER DRAW From unnamed tributary at 312036 / 1093446 to Mexico border 15080301 – 002B 0.4 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 03/07/2000		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Site WD-1A (at border) SPWHD000.04 100512	ADEQ TMDL	1 total and dissolved metals: Arsenic, beryllium		

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters.	Insufficient sampling events.	
MONITORING RECOMMENDATIONS		Low Priority – Collect core parameters to represent at least three seasons during an assessment period.	

WINWOOD CANYON From headwaters to Mule Gulch 15080301 -- 340 1 Mile	USE SUPPORT	OVERALL ASSESSMENT	
	A&We – Inconclusive PBC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 10/11/2000; 09/28/2004		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Tributary from Mural Hill above mineralized zone SPWNC000.67 102926	ADEQ TMDL	2 dissolved metals: Cadmium, copper, lead, and zinc 1 total metals: Copper, lead, zinc 2 pH		
Above old mill site SPWNC000.35 102927	ADEQ TMDL			

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper (dissolved)	11.9 µg/L at 49 mg/L hardness A&We acute	09/28/2004 – 49 µg/L	Inconclusive – 1 exceedance in a 3-year period.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Copper	Insufficient core parameters	Insufficient sampling events.	
DISCUSSION OF EXCEEDANCES		Samples were collected to support the Mule Gulch copper TMDL. Copper loadings from this tributary will be addressed in the Mule Gulch copper TMDL currently being developed.	
MONITORING RECOMMENDATIONS		Medium Priority –Collect copper samples as needed to support TMDL development.	

Santa Cruz Watershed

Watershed Description

This watershed is composed of two hydrological areas: 1) the Santa Cruz River which flows north to the Gila River, and 2) a series of streams that flow south and eventually into the Rio Magdalena and Rio Sonoyta in Mexico. Most of the population in this 11,100 square mile watershed is clustered around metropolitan Tucson (approximately 844,000 people in the 2000 census) and Nogales in Arizona and Sonora Mexico (370,000 people, mostly in Mexico). Land ownership is approximately: 40% Tribal, 25% federal, 20% private, and 15% state.

Grazing is the dominant land use, with irrigated crop production near streams. Active and abandoned mines are scattered throughout the watershed. There are eight wilderness areas along with national forest and national monuments with restricted land uses.

Elevations range from 9,156 feet (above sea level) at Mount Lemmon to about 1,100 feet at the Gila River. Expect for a string of high mountains in the east, most of the watershed is below 5,000 feet, with low Sonoran desert flora and fauna and warmwater aquatic communities where perennial waters exist.

Water Resources

This watershed obtains about 15 inches of rain and up to 1 inch of snow per year. Ground water pumping has eliminated natural perennial flow in most of the mainstem Santa Cruz River. Treated wastewater effluent provides perennial flow below discharges from the cities of Nogales and Tucson.

An estimate of surface water resources in the Santa Cruz Watershed is provided in the following table. Waters on Tribal lands are not assessed by ADEQ; therefore, those statistics are shown separately.

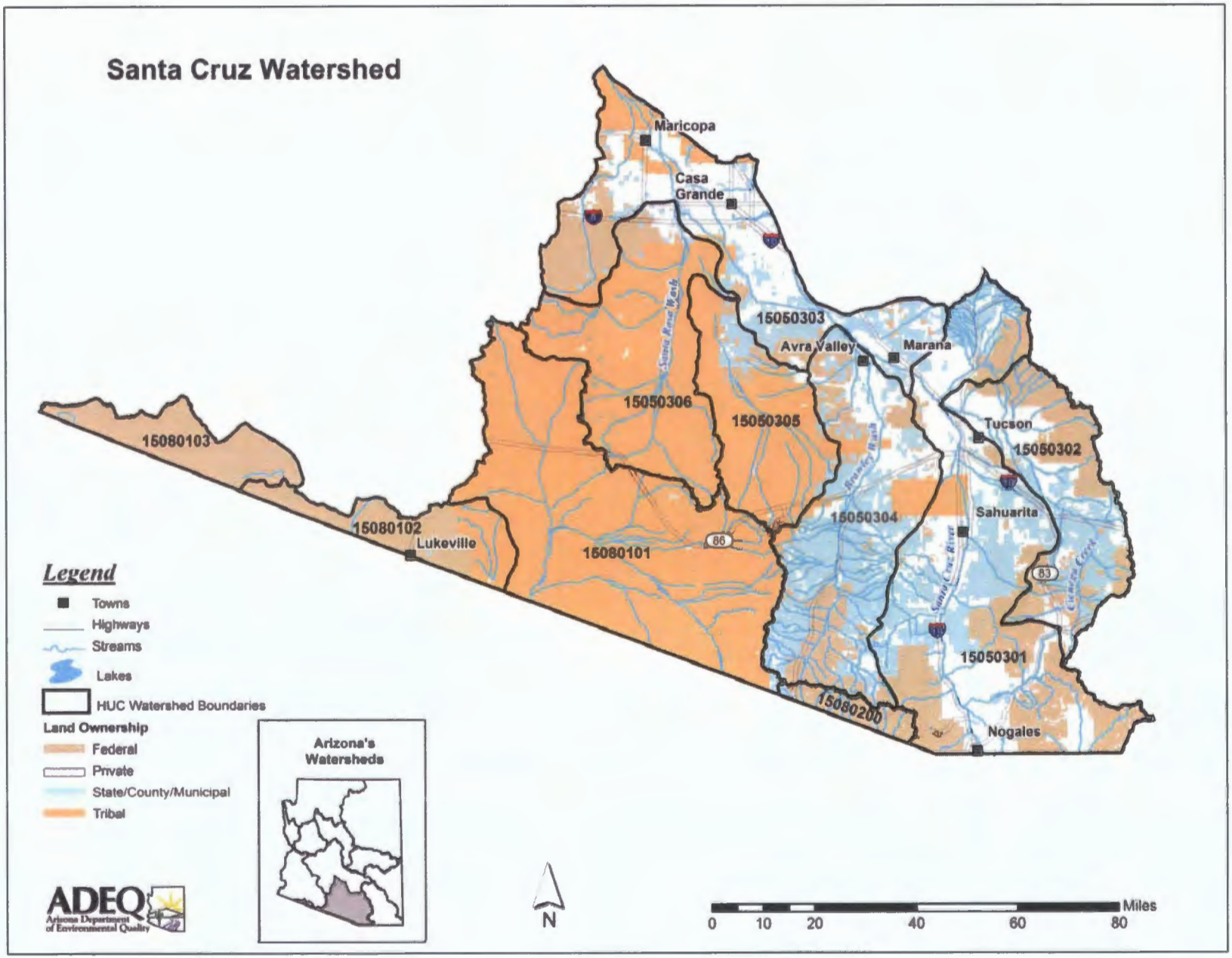
Estimated Surface Water Resources in the Santa Cruz Watershed

	Perennial	Intermittent	Ephemeral
Stream miles	85	500	7,245
	Perennial	Non-perennial	
Lake acres	1,366	0	

On Tribal Land – Not Assessed

	Perennial	Intermittent	Ephemeral
Stream miles	0	50	3,795
	Perennial	Non-perennial	
Lake acres	9,523	11,119	

Ambient monitoring focuses on perennial waters; however, special investigations may identify water quality problems on intermittent and even ephemeral waters. Estimated miles and acres are based on USGS digitized hydrology at 1:100,000 and have been rounded to the nearest 5 miles or 5 acres.


Santa Cruz Watershed
Maricopa
Casa Grande
Avra Valley
Marana
Tucson
Sahuarita
Lukeville
Nogales
15080103
15080102
15080101
15080200
15050306
15050305
15050303
15050304
15050302
15050301
Santa Rosa Wash
Brawley Wash
Santa Cruz River
Cienega Creek
86
83
Legend
Towns
Highways
Streams
Lakes
HUC Watershed Boundaries
Land Ownership
Federal
Private
State/County/Municipal
Tribal
ADEQ
Arizona Department of Environmental Quality
Arizona's Watersheds
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0 10 20 40 60 80
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Watershed Partnerships

- **The Friends of the Santa Cruz River (FOSCR)**
  FOSCR focuses on the upper Santa Cruz River near Nogales Arizona/Mexico. Its mission is to ensure continued flow in the river, promote the highest water quality achievable, and protect and restore the riparian ecosystem and diversity of live along the stream. It accomplished this goal through education, partnerships, and advocacy for the benefit of present and future generations. They meet monthly on the 3rd Thursday. Contact Sherry Sass (President) at (520) 398-9093 or admin@friendsofsantacruzriver.org, or sushis@aol.com.

- **Pima County Association of Government's (PAG) Watershed Planning Subcommittee.**
  This group provides a forum for exchanging information among stakeholders, concerning projects that may affect water quality or quantity in Pima County (much of the Santa Cruz Watershed). Pubic participation is encouraged. No regularly scheduled meetings. Information concerning the group's activities can be obtained at their website: http://www.pagnet.org/WQ/participation.htm, at wq@pagnet.org; or (520) 792-1093.

Special Studies and Water Quality Improvement Projects

Total Maximum Daily Load Analyses – The following TMDL analyses have been completed, are ongoing, or are scheduled to be completed in this watershed. Further information about the status of these investigations or a copy of the TMDL, if completed, can be obtained at ADEQ's website: www.azdeq.gov.

- Alum Gulch and a tributary (Humboldt Canyon) are impaired by cadmium, copper, zinc, and low pH (acidity). Pollution by these metals and acid mine drainage pose a risk to aquatic life and wildlife. TMDL analyses were completed and approved in 2003. Based on this study, primarily loading originates from the World's Fair Mine area and Humboldt Canyon with relatively minor contributions from Trench Camp Mine and the January Adit. It appears that the remediation efforts at Trench Camp and the January Adit have been relatively successful. To achieve standards, ADEQ will be working with landowners and interested stakeholders to implement the following remediation actions and strategies recommended in the TMDL:
  - Remove mine residue dumps from the stream banks,
  - Remove mine-waste sediments from the streambeds, and
  - Isolate and treat mine-impacted ground water discharges (springs and adits).

- Arivaca Lake is impaired by mercury.
  A fish consumption advisory concerning mercury in fish tissue has been issued at this lake because mercury poses a health problem to humans. Mercury also poses risks to other species that eat the fish. EPA collaborated with ADEQ and completed a mercury TMDL in 1999. The primary sources of mercury were identified as: atmospheric deposition (particulates in the air) and natural deposition from local substrates. Because atmospheric deposition is not readily controllable, and the primary land use is grazing, improvements in livestock management to reduce soil erosion were targeted in the TMDL implementation plan. ADEQ is working with interested landowners and stakeholders to implement these improvements.

- Harshaw Creek is impaired by copper and low pH (acidity).
  Copper and acid mine drainage may negatively impact aquatic life and wildlife. TMDL loading analyses were completed in 2003. This report identified abandoned or inactive mines that were the primary sources of the copper and acid mine waste. To achieve standards, ADEQ will be working with landowners and interested stakeholders to implement the following remediation actions and strategies recommended in the TMDL:
  - Remove mine residue dumps from the stream banks,
  - Remove mine-waste sediments from the streambeds, and
  - Isolate and treat mine-impacted ground water discharges (springs and adits).

- Lakeside Lake in Tucson is impaired by nutrients, ammonia, high pH, and low levels of dissolved oxygen.
  Excess nutrients (nitrogen) may result in low dissolved oxygen and high pH and potentially toxic algal blooms and fish kills. High levels of ammonia may also pose a risk to aquatic life. TMDL analyses were completed in 2005 and indicated that the water sources supplying the lake were the primary source of nutrients to the lake. Lakeside

Lake receives secondary-treated reclaimed effluent, ground water, Central Arizona Project (CAP) water from the Colorado River, and occasional storm water runoff from Atterbury Wash.

ADEQ has been working with the city of Tucson, Pima County Wastewater Management Department, and other interested stakeholders to mitigate these problems. The city of Tucson has been testing aerators that physically increase dissolved oxygen levels in the water column. However, increased agitation and vertical mixing stimulated greater algal productivity, high pH levels, and did not reduce the ammonia concentration. Tucson is also testing the use of alum to reduce phosphorus loading in the lake.

- Three R (3R) Canyon and Cox Gulch are impaired by beryllium, cadmium, copper, zinc, and low pH (acidity). These metals and acid mine drainage represent a risk to aquatic and wildlife. TMDLs were completed in 2003 and quantified contributions from 3R Mine and unnamed springs. However, a Phase II TMDL is needed to determine if there are other significant contributions in the basin. To achieve standards, ADEQ will be working with landowners and interested stakeholders to implement the following remediation actions and strategies recommended in the TMDL:
    - Remove mine residue dumps from the stream banks,
    - Remove mine-waste sediments from the streambeds, and
    - Isolate and treat mine-impacted ground water discharges (springs and adits).

- Pena Blanca Lake is impaired by mercury.
  A fish consumption advisory concerning mercury in fish tissue has been issued at this lake because mercury poses a health problem to humans. Mercury also poses risks to other species that eat the fish. EPA collaborated with ADEQ and completed a mercury TMDL in 1999. The study identified three sources of mercury: atmospheric deposition (particulates in the air), St. Patrick Mine ball mill site, and generalized natural deposition from local substrates. To meet standards, the TMDL analysis and implementation plan indicated that the tailings and sediment should be removed from the ball mill site. ADEQ is to conduct further monitoring on fish tissue to determine whether these measures were sufficient.

- Nogales Wash is impaired by ammonia, *Escherichia coli*, copper, and chlorine.
  Exceedances of the *E. coli* standard may represent a significant public health concern if people are swimming or even wading in the water. Ammonia, chlorine and copper pose a threat to aquatic life and wildlife. Wastewater infrastructure has deteriorated in Mexico and must be replaced. To protect the human health, chlorine is added directly to the wash continuously via drip systems and manual introduction of chlorine tables. Chlorine residuals are monitored daily in an attempt to keep chlorine residuals at or above 1 mg/L at the US and Mexico border (which is 100 times above the standard for aquatic life use). Although these conditions pose significant threats to human health and aquatic life, actions to correct the situation are dependent on ongoing international negotiations between several government officials (representing the United States, Arizona, Mexico, the cities of Nogales Arizona and Nogales Sonora, and the Mexican state of Sonora). The source loadings are known and the technical means to correct the problem have been determined. These TMDLs will be developed if needed after facility upgrades are completed.

- Santa Cruz River from Mexico to the Nogales International Wastewater Treatment Plant discharge is impaired by *Escherichia coli* bacteria.
  Exceedances of the *E. coli* standard may represent a significant public health concern if people are swimming or even wading in the water. Completing this TMDL may be complex due to probable sources in Mexico and intermittent stream flow. Drought conditions have slowed collection of adequate data to determine source loadings. A TMDL will be initiated when flow resumes.

- Sonoita Creek is impaired by zinc in the 14-mile segment just above its confluence with the Santa Cruz River. The federally protected Gila topminnow occurs in this reach and could be negatively impacted by dissolved zinc. Sources of the zinc have not been investigated but are likely related to transport of zinc during storm flows from its tributaries (e.g., Alum Gulch and 3R Canyon). Monitoring will be used to determine if strategies implemented on these tributaries reduce zinc transport sufficiently to eliminate exceedances on Sonoita Creek.

- Parker Canyon Lake is impaired by mercury.
  A fish consumption advisory concerning mercury in fish tissue has been issued at this lake because mercury poses a health problem to humans. Mercury also poses risks to other species that eat the fish. A TMDL is scheduled to be initiated in 2006.

Water Quality Improvement Grant Projects – ADEQ awarded the following Water Quality Improvement Grants (319 Grants) in this watershed. More information concerning these grants or projects can be obtained at: http://www.azdeq.gov/environ/water/watershed/fin.html.

- **BMPs to Control Sedimentation on the Santa Cruz River Project**
  The Coronado Resource Conservation and Development Area (2000)
  Implement management practices to control sedimentation along a thousand feet of the Santa Cruz River.

- **Riverfront Residence Green Roof Project**
  A private consultant (2001)
  Install a 3400 square feet "green roof" (waterproofing, soil, and vegetative cover) to demonstrate how to mitigate impacts of urban runoff by slowing and absorbing runoff from the roof. The landscaping acts as a filter strip, minimizing pollutant transport. The reduction of runoff should also reduce soil erosion on-site and downstream.

- **Best Management Practices: A Balancing Act Project**
  Pima Natural Resource Conservation District (2001)
  Demonstrate agricultural practices that will minimize crop amendment (fertilizers, pesticides) loss. Losses frequently occur due to deep percolation, erosion, runoff, evaporation, and drift.

- **Palo Alto Runoff Control Project**
  Coronado Resource Conservation and Development Area (2002)
  Implement Best Management Practices on high priority areas in the Alter Valley subwatershed to control runoff that contributes sediment to the Santa Cruz River system. The objective is to reduce sediment production from gully erosion and headcutting on the Palo Alto Ranch along Alter Wash.

- **Enhanced Implementation of Deferred Rotational Grazing on C6 Ranch Project**
  Rancher in collaboration with the University of Arizona Extension Service (2002)
  Project will build fences to exclude livestock, develop alternative water sources for livestock, construct erosion control dams in gullies, and implement a comprehensive plan for monitoring effectiveness. Project is also a teaching opportunity.

- **Santa Cruz River Riparian Re-vegetation Project**
  Montessori De Santa Cruz Charter School (2003)
  Repair riparian habitat and provide community education and outreach. This is a collaborative project between the Montessori School, Tumacacori National Historical park Service, and the Friends of the Santa Cruz River.

- **Santa Cruz River Sediment Control Project**
  Coronado Resource Conservation and Development Area (2004)
  Install 800 feet Kellner jacks and revegetate with native species along the south river road bank of the Santa Cruz River to improve stream bank stability.

- **Redrock Canyon and Upper Santa Cruz Watershed Improvement Project**
  Coronado Resource Conservation and Development Area (2005 and 2006).
  Work with the five grazing allotments in the Red Rock Canyon (a tributary to Sonoita Creek) control erosion and sediment transport by implementing best grazing practices. Project excluded cattle from riparian areas using fencing, revegetation of riparian areas, and development of alternative sources of water.

Water Protection Fund Projects – The following Water Protection Fund Projects were awarded by the Arizona Department of Water Resources. More information about these funds or projects can be obtained from the ADWR web site at: http//www.azwater.gov.

- **Riparian Restoration on the Santa Fe Ranch Project**
  The Coronado Resource Conservation and Development Area (2000)
  Revegetate degraded riparian areas along the Santa Cruz River. The project would erect fencing to exclude cattle. The project would also develop a teacher's guide to riparian restoration, provide site tours, and a photo display of techniques used.

- **Tucson Audubon Society's North Simpson Ranch Riparian Recovery Project**
  Tucson Audubon Society (2000 and 2004)
  Increase vegetative diversity and increase stream bank stability along the Santa Cruz River. Management measures included rainwater harvesting, mulching, and fencing out cattle and unauthorized vehicles. The project would also provide a long-range strategy for habitat connectivity, human access, and a sustainable riparian habitat.

- **Riparian Restoration on the San Xavier District Project**
  San Xavier District of the Tohono O'odham Indian Community (2002)
  This was a cooperative riparian restoration and management project sponsored by the San Xavier District of the Tohono O'odham, Mark Briggs (an ecologist), the Sonoran Joint Venture, and the U.S. Fish and Wildlife Service.

- **Esperanza Ranch Riparian Restoration Project**
  The Tucson Audubon Society (2005)
  Restore the riparian area in a 300 acre ranch along the Santa Cruz River and Chivas Wash.

U.S. Army Corps of Engineers' Ecosystem Restoration Projects – Ecosystem restoration, environmental stewardship, and radioactive site cleanup projects are funded through the annual federal Energy and Water budget. The purpose of ecosystem restoration is to re-establish attributes of a natural functioning and self-regulating system.

- **Ed Pastor Kino Environmental Restoration Project**
  The Tucson (Ajo) Detection Basin and Tucson Diversion Channel has been expanded to include 141 acres, including: 50 acres of wetlands, 12 acres of wildlife and open water areas, and 38 acres of mesquite bosque and ephemeral grassland. The project uses stormwater runoff and reclaimed water.

- **Agua Caliente Spring**
  The project has multiple objectives that will improve ecosystem function, restore the natural structure and function of the spring, improve habitat, and create education and recreational opportunities. The recommended plan would keep one pond and create a native cienaga-type wetland (eliminating pond 2 and 3).

- **Rillito River Riparian Area (Swan Wetlands)**
  The plan is to restore riparian vegetative communities along the south bank of the Rillito River, between Craycroft Road and Columbus Boulevard (61 acres), to a more natural state. Improvements in the riparian condition will increase functional habitat and minimize sediment and organic accumulation.

- **Paseo de las Iglesias**
  The objective is to increase the functional riparian and floodplain habitat along the Santa Cruz River, the West Branch of the Santa Cruz River, and Los Reales Road. Increased riparian area will increase wildlife habitat, provide passive recreation opportunities, reduce flood damage, reduce bank erosion and sedimentation, and improve water quality. Irrigated planting of mesquite and riparian shrub will be placed on terraces above the low flow channel and in the historic floodplain, with small areas of emergent marsh and cottonwood-willow habitat. Water will be provided by water harvesting and reclaimed wastewater.

- **El Rio Antiguo**
  Restore riparian vegetative communities along the Rillito River, between Craycroft Road and Campbell Avenue. Cottonwood-willow, mesquite, shrub and grasses will be planted in the channel, in tributary mouths, and in water harvesting basins on the tributaries. A culvert and pipeline will allow water to flow behind the soil cement during 2-year and higher flood events to provide water to riparian pant communities along the north bank in the upstream study area.

- **Tres Rios del Norte**
  This project is located along the Santa Cruz River between Prince Road to Sanders Road, West Moore Road and West Avra Valley Road. It will restore 19 miles of wetland and riparian vegetative communities along the Santa Cruz River and its adjacent floodplains. The restoration would vastly improve mesquite, cottonwood-willow, and emergent wetland habitats to a condition supportive of wildlife, and for the benefit of residents and visitors to the area.

Other Water Quality Studies – The following additional water quality related studies were completed since 2000 in this watershed:

- ***The Water Quality of Priority Streams in Pima County***
  Pima Association of Governments (2002)
  This report compiles the existing water quality data and other pertinent information for the streams that have been identified as priorities in Pima County.

- ***Water Issues of the Arizona - Mexico Border: The Santa Cruz, San Pedro, and Colorado Rivers.***
  Terry W. Sprouse, University of Arizona, Water Resources Research Center (2005)
  Summary of water quality and water quantity issues facing this region.

- ***Water Quality Data for Selected National Park Units, Southern and Central Arizona and West-Central New Mexico, Water Years 2003 and 2004***
  U.S. Geological Survey in cooperation with the National Park Service (2005)
  Field measurements and water samples were collected at springs, mine adits, streams, and wells at 30 sites in 9 park units in 2003-2004 to provide baseline (ambient) water quality information. Only 24 of the 30 sites were sampled three times due to drought conditions and lack of water during parts of the year. Analyses of data collected at these sites indicated:
  - Dissolved uranium was elevated at Williams Spring in Organ Pipe National Monument at 32 µg/L; and
  - Concentrations of nitrate and nitrite (nutrients) were elevated at Dripping Springs in Organ Pipe Cactus National Monument, Fern Grotto on Coronado National Memorial, and Wild Horse Mine in the Tucson Mountain District of Saguaro National Park.

- ***Simulated Water Level Responses, Ground Water Fluxes, and Storage Changes for Recharge Scenarios along Rillito Creek, Tucson, Arizona***
  John P. Hoffmann and S.A. Leake, U.S. Geological Survey (2004)
  The amount of water currently recharging the aquifers within the Tucson area is insufficient to meet current and projected demands. Ground water in this area has dropped more than 200 feet since the middle of the 20th Century (causing streams to become ephemeral). A local ground water flow model is used to simulate four recharge scenarios along Rillito Creek in northern Tucson to evaluate mitigating effects on ground water deficits and water level declines in Tucson's Central Well Field.

- ***Assessment of Selected Inorganic Constituents in Streams in the Central Arizona Basins Study Area, Arizona and Northern Mexico, through 1998***
  David Anning – U.S. Geological Survey, National Water Quality Assessment Program (2003)
  Inorganic chemical data (dissolved solids, suspended sediment, and nutrients) and stream properties (temperature, pH, dissolved oxygen) were analyzed to assess water quality, determine natural and human factors affecting water quality, and compute stream loads.

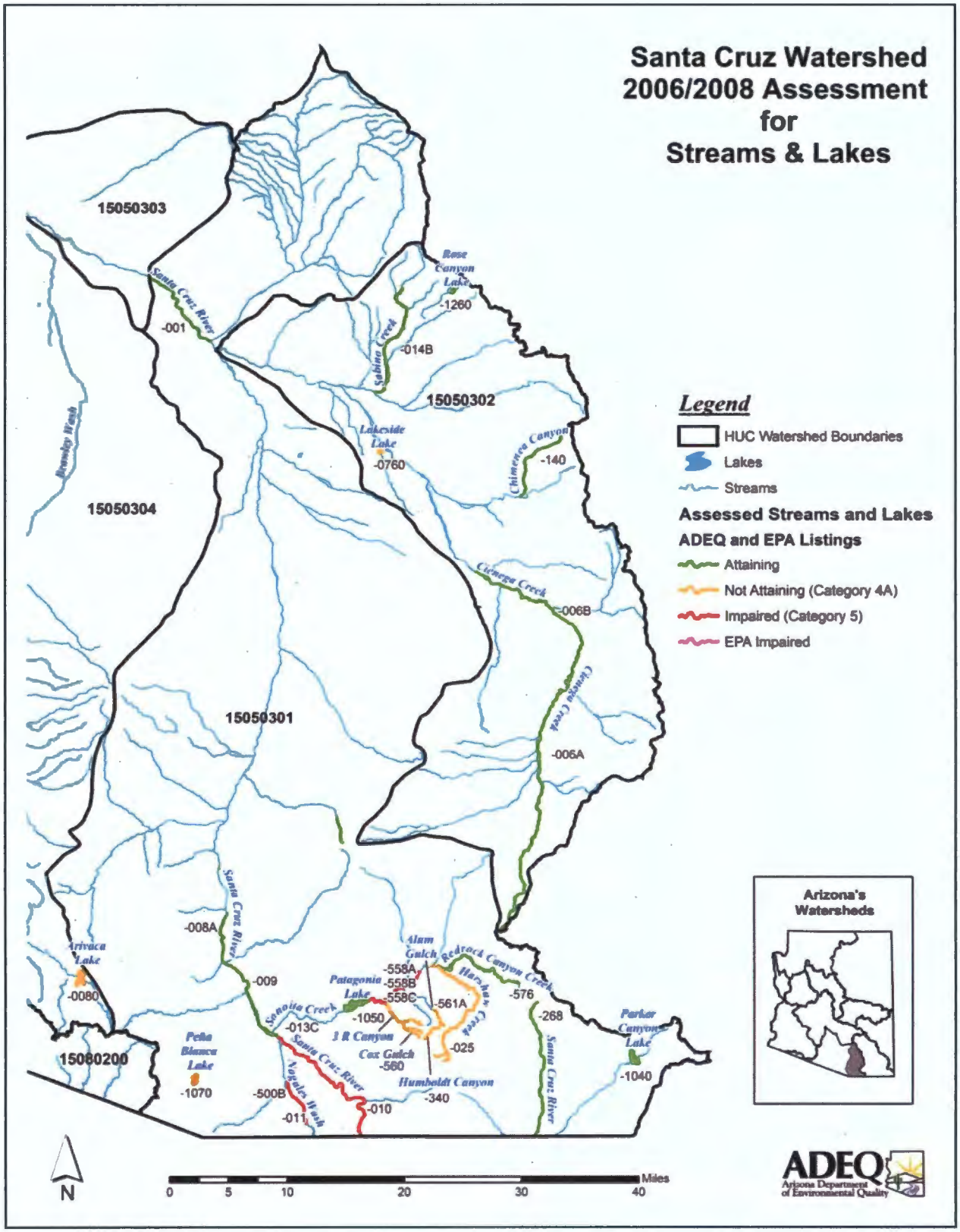
- ***Border Crossings – Water and Wastewater at the International Boundary***
  R.G. Charles Graf and Craig Tinney (ADEQ) and Tom Konner (EPA Region IX)
  September/October 2005 Southwest Hydrology (2005)
  This article describes the problems and progress being made in addressing water quality and wastewater infrastructure along the Mexican border with California and Arizona for seven key populations centers: San Diego/Tijuana, Tecate, Calexico/Mexicali, San Luis/San Luis Rio Colorado (Yuma area), Nogales, Naco/Bisbee, and Douglas/Agua Prieta.

Assessments

The Santa Cruz Watershed can be separated into the following drainage areas (subwatersheds):

15050301	Upper Santa Cruz
15050302	Pantano Wash
15050302	Lower Santa Cruz
15050304	Brawley Wash
15050305	Aguirre Wash
15050306	Santa Rosa Wash
15080101	San Simon Wash (On Tribal Land – Not Assessed)
15080102	Rio Sonoyta
15080103	Tule Desert
15080200	Rio Asuncion

These drainage areas and the surface waters assessed as "attaining" or "impaired" are illustrated on the following watershed map. Methods used to complete these assessments are described in the "Surface Water Assessment Methods and Technical Support" document (2006).


Santa Cruz Watershed
2006/2008 Assessment
for
Streams & Lakes
15050303
15050302
15050304
15050301
15080200
Rose Canyon Lake
-1260
Santa Cruz River
-001
Sabino Creek
-014B
Lakeside Lake
-0760
Chimenea Canyon
-140
Cienega Creek
-006B
Cienega Creek
-006A
Santa Cruz River
-008A
Arivaca Lake
-0080
-009
Patagonia Lake
-558A
-558B
-558C
Alum Gulch
Bedrock Canyon Creek
Harshaw Creek
-561A
-576
-268
Sonoita Creek
-013C
-1050
3 R Canyon
Cox Gulch
-560
-025
Parker Canyon Lake
-1040
Peña Blanca Lake
-1070
-500B
-011
Santa Cruz River
-010
Humboldt Canyon
-340
Santa Cruz River
Legend
HUC Watershed Boundaries
Lakes
Streams
Assessed Streams and Lakes
ADEQ and EPA Listings
Attaining
Not Attaining (Category 4A)
Impaired (Category 5)
EPA Impaired
Arizona's Watersheds
N
0
5
10
20
30
40
Miles
ADEQ
Arizona Department of Environmental Quality

ALUM GULCH From headwaters to 312820 / 1104351 (to beginning of intermittent flow) 15050301 – 561A 0.8 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&We – Impaired PBC – Impaired AgL – Impaired	Category 4A Not attaining	Cadmium, copper, zinc, and pH	TMDL completed in 2003. Need to implement improvements at mining sites.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATES: 01/11/2000; 06/08/2004 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At January Mine Adit SCALG005.45 102952	USGS Ambient	1 total and 2 dissolved metals: Cadmium, copper, zinc 1 dissolved only: Barium, beryllium, boron, chromium, lead, manganese, nickel, silver	2 samples: Dissolved oxygen and pH	
Below January Mine Adit, above Humboldt Canyon SCALG005.35 100838	ADEQ TMDL			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Cadmium	50 µg/L AgL	01/11/2000 – 170 µg/L 06/08/2004 – 208 µg/L	Remains impaired -- Exceeded in 2 of 2 samples (Binomial)
Copper (dissolved)	85.8 µg/L at >400 mg/L hardness A&We acute	01/11/2000 – 400 µg/L	Remains impaired -- Exceeded once in the last 3 years of monitoring
Lead	15 µg/L PBC	06/08/2004 – 143 µg/L	Inconclusive – Exceeded in only sample tested for lead concentration. (Binomial)
Zinc (dissolved)	3,599 µg/L at >400 mg/L hardness A&We acute	01/11/2000 – 56,000 µg/L 06/08/2004 – 99,300 µg/L	Remains impaired -- Exceeded twice in the last 3 years of monitoring
Zinc (total)	25,000 µg/L AgL	01/11/2000 – 56,000 µg/L 06/08/2004 – 99,300 µg/L	Remains impaired -- Exceeded in 2 of 2 samples (Binomial)
pH	<6.5 SU A&We, PBC, AgL	01/11/2000 – 4.7 SU 06/08/2004 – 4.5 SU	Remains impaired -- Exceeded in 2 of 2 samples (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Lead	Insufficient core parameters	Insufficient monitoring events	
MONITORING RECOMMENDATIONS		Medium Priority – Collect samples during crucial conditions to determine effectiveness of improvements at mine sites in this watershed once improvements are completed. Collect additional lead samples due to exceedance. Collect core parameters to represent at least 3 seasons during an assessment period.	

ALUM GULCH From 312820 / 1104351 to 312917 / 1104425 (intermittent flow) 15050301 – 561B 1.1 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Ww – Impaired FBC – Impaired AgL – Impaired	Category 4A Not attaining	Cadmium, copper, zinc, and pH	TMDL completed in 2003. Need to implement improvements at mining sites.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATES: 01/11/2000		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below World's Fair Mine SCALG004.45 100870	ADEQ TMDL	1 total and dissolved metal samples: Cadmium, copper, zinc	1 sample: Dissolved oxygen and pH	

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Cadmium	50 µg/L – AgL 84 µg/L – FBC	01/11/2000 – 290 µg/L	Remains impaired – Exceeded criterion in only sample collected. (Binomial)
Cadmium (dissolved)	19.1 µg/L at >400 mg/L hardness A&Ww acute	01/11/2000 – 220 µg/L	Remains impaired – Exceeded criterion in only sample collected.
Copper	500 µg/L – AgL 1300 µg/L – FBC	01/11/2000 – 2100 µg/L	Remains impaired – Exceeded criterion in only sample collected. (Binomial)
Copper (dissolved)	49.6 µg/L at >400 mg/L hardness A&Ww acute	01/11/2000 – 2000 µg/L	Remains impaired – Exceeded criterion in only sample collected.
Zinc	25,000 µg/L AgL	01/11/2000 – 53,000 µg/L	Remains impaired – Exceeded criterion in only sample collected. (Binomial)
Zinc (dissolved)	Calculated as 379.3 µg/L A&Ww acute	01/11/2000 – 54,000 µg/L	Remains impaired – Exceeded criterion in only sample collected.
pH	<6.5 SU A&Ww, FBC, AgL	01/11/2000 – 3.2 SU	Remains impaired – Exceeded criterion in only sample collected. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient monitoring events	
MONITORING RECOMMENDATIONS		Medium Priority – Collect samples during crucial conditions to determine effectiveness of improvements at mine sites in this watershed once improvements are completed. Collect core parameters to represent at least 3 seasons during an assessment period.	

ARIVACA CIENEGA 15050304 -- 0001 3 Acres	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 05/15/2002		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Mid lake SCACL-USGS 101583	USGS Ambient	1 dissolved metal only: Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, nickel, selenium, silver, uranium, and zinc. (0 total metals)	1 sample: Dissolved oxygen and pH	1 Total dissolved solids 1 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Missing all core parameters	Insufficient sampling events.	
MONITORING RECOMMENDATIONS		Low Priority – Collect missing core parameters to represent at least 3 seasons during an assessment period.	

ARIVACA LAKE 15050304 -- 0080 118 Acres	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Ww – Inconclusive FBC – Attaining FC – Impaired AgI – Attaining AgL – Attaining	Category 4A Not attaining	Mercury in fish tissue	Mercury TMDL completed in 1999

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 07/19/2000 – 05/21/2001; 09/17/2003; 04/06/2004 NUMBER AND TYPES OF SAMPLES Metals	Nutrients – Related	Other
At Dam SCARI-A 100000 (main site sampled)	ADEQ, U of A, AGFD Ambient	6-7 total and 4 dissolved: Cadmium, chromium, lead, nickel, zinc 7 total and 1 dissolved metals: Antimony, arsenic, barium, beryllium, boron, copper, manganese, mercury	6-7 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	3 *E. coli* bacteria 7 Fluoride 3 Total dissolved solids 7 Turbidity
Mid lake SCARI-B 101734	U of A Ambient			
At boat ramp SCARI-C 102534	AGFD Ambient			
At Chimney Canyon SCARI-CHIM 102535	AGFD Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	6.0 mg/L A&Ww	09/17/2003 – 4.2 mg/L	Attaining – Did not meet dissolved oxygen criteria in 2 of 10 samples (1 of 7 sampling events). (Binomial)
Selenium	2.0 µg/L A&Ww chronic	05/21/2001 – 4.0 µg/L	Inconclusive – Exceeded 1 time during the assessment period.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Selenium	Insufficient dissolved copper needed to assess A&W		Lab detection limits for selenium and dissolved metals (cadmium, copper, lead, and mercury) were higher than A&W chronic criteria.
MONITORING RECOMMENDATIONS		Medium Priority – Collect samples to determine the effectiveness of water quality improvement actions. Collect selenium samples due to the exceedance. Collect core parameters to represent at least 3 seasons during an assessment period. Use lower lab detection limit for dissolved metals and selenium.	

BIG CASA BLANCA CANYON From headwaters to Sonoita Creek 15050301 – 606 3 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 07/03/2004		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At long pool SCBCC006.33 103031	AGFD Ambient	2 total metal: Arsenic, barium, beryllium, cadmium, chromium, copper, manganese, nickel silver, and zinc. (Both sites sampled on same date)		
At frog pool SCBCC006.74 103032	AGFD Ambient			

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	Lab detection limits for selenium, mercury, and lead were higher than the applicable water quality criteria.
MONITORING RECOMMENDATIONS		Low Priority – Collect missing core parameters to represent at least 3 seasons during an assessment period. Use lower lab detection limit for selenium, mercury, and lead.	

CARPENTER TANK 15050304 -- 0002 3 Acres	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 05/15/2002		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Mid lake SCCAR-USGS 101582	USGS Ambient	1 dissolved metal only: Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, nickel, selenium, silver, uranium, and zinc. (0 total metals)	1 sample: Dissolved oxygen and pH	1 Total dissolved solids 1 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events.	
MONITORING RECOMMENDATIONS		Low Priority – Collect missing core parameters to represent at least 3 seasons during an assessment period.	

CHIMENEA CREEK	USE SUPPORT	OVERALL ASSESSMENT	
From headwaters to Rincon Creek 15050302 – 140 8 Miles	A&Ww – Attaining FBC – Inconclusive FC – Inconclusive	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 05/14/2002 – 10/31/2003; 09/14/2005 – 11/16/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Saguaro National Park SCCHM004.75 101593	USGS Ambient	0-1 total metals and 4-5 dissolved: Antimony, beryllium, boron, cadmium, chromium, copper, lead, manganese, and zinc. 0-1 total and 0-1 dissolved: Arsenic, barium, mercury, nickel, selenium, silver, uranium	1 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen 3 samples: Dissolved oxygen 4 samples: Total phosphorus 7 samples: pH	1 Fluoride 4 Total dissolved solids 1 Suspended sediment concentration 1 Turbidity
Near Madrona Ranger Station SCCHM002.01 101584	USGS			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient total metals and *E. coli* bacteria to assess FBC and AgL.		Lab detection limit for selenium was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority – Collect missing core parameters to represent at least 3 seasons during an assessment period. Use lower lab detection limit for selenium.	

CIENEGA CREEK	USE SUPPORT	OVERALL ASSESSMENT	
From headwaters to Gardner Canyon 15050302 – 006A 18.08 Miles	A&Ww – Attaining FBC – Attaining FC – Attaining AgL – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 12/11/2000 – 03/20/2002; 09/27/2005 – 02/16/2006 (Included 02/16/2005 to have sufficient samples to assess designated uses)		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Cedar Canyon SCCIE026.68 101176	ADEQ Special study	14-15 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, nickel, silver, thallium, and zinc. 15 total and 0-2 dissolved: Boron, manganese, mercury	10-13 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	3 *E. coli* bacteria 14 Fluoride 14 Total dissolved solids 1 Suspended sediment concentration 14 Turbidity
At Stevenson Canyon SCCIE022.42 100266	ADEQ Ambient			
Below Pump Canyon SCCIE020.88 101177	ADEQ Special Study			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	6.0 mg/L A&Ww	09/27/2005 – 5.0 mg/L	Attaining – Low dissolved oxygen due to natural conditions of low flow and ground water upwelling. Low nutrient levels. Flow 0.5 cfs.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Collected all core parameters.		Lab detection limits for selenium and dissolved mercury and nickel were higher than the A&W chronic criteria in at least 5 samples.
MONITORING RECOMMENDATIONS		Low Priority – Use lower lab detection limits for selenium, dissolved mercury, and dissolved nickel.	

CIENEGA CREEK From Gardner Canyon to USGS gage station (Pantano Wash) 15050302 – 006B 28.8 Miles Unique Water	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Attaining FBC – Attaining FC – Attaining AgL – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 12/12/2000 – 03/20/2002; 9/26/2005 – 2/14/2006 (Added in 2006 data to assess more uses) NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
SW of bench mark #3490 SCCIE006.69 101178	ADEQ Special study	10-14 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, nickel, silver, thallium, and zinc. 14-15 total and 0-2 dissolved: Boron, manganese, mercury	13-14 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	3 *E. coli* bacteria 14 Fluoride 14 Total dissolved solids 2 Suspended sediment concentration 15 Turbidity
Above Davidson Canyon SCCIE0004.25 101179	ADEQ Ambient and Special study			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	6.0 mg/L A&Ww	09/18/2001 – 5.4 mg/L	Attaining – Low dissolved oxygen due to natural conditions of low flow and ground water upwelling. Low nutrient levels. Flow 0.7 cfs.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Collected all core parameters.		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority –Use lower lab detection limits for selenium and dissolved mercury.	

COX GULCH From headwaters to Three R Canyon 15050301 – 560 16.3 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Ww – Impaired FBC – Impaired FC – Inconclusive AgL-- Impaired	Category 4A Not attaining	Cadmium, copper, zinc, and pH	Samples were collected on this reach in support of the Three R Creek TMDL. TMDL completed in 2003

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 01/11/2000		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below tributary to European Mine SCCXG000.81 100869	ADEQ TMDL	1 total and dissolved metal sample: Beryllium, cadmium, copper, and zinc	pH – 1 sample	

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Beryllium (total)	5.3 µg/L A&Ww chronic	01/10/2000 – 9.4 µg/L	Inconclusive – Exceeded in only sample collected.
Copper (total)	500 µg/L – AgL 1300 µg/L -- FBC	01/10/2000 – 18,000 µg/L	Remains impaired – Exceeded in only sample collected during this assessment period. (Binomial)
Copper (dissolved)	49.6 µg/L at >400 mg/L hardness A&Ww acute	01/10/2000 – 18,000 µg/L	Remains impaired – Exceeded in only sample collected during this assessment period.
Cadmium (dissolved)	19.1µg/L at >400 mg/L hardness A&Ww acute	01/10/2000 – 60 µg/L	Remains impaired – Exceeded in only sample collected during this assessment period.
Zinc (dissolved)	379 µg/L at >400 mg/L hardness A&Ww acute	01/10/2000 – 11000 µg/L	Remains impaired – Exceeded in only sample collected during this assessment period.
pH	<6.5 SU A&Ww, FBC, AgL	01/10/2000 – 3 SU	Remains impaired – Exceeded in only sample collected during this assessment period. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient monitoring events	
MONITORING RECOMMENDATIONS		Medium Priority – Collect additional beryllium samples due to exceedance. Schedule follow up monitoring to determine effectiveness of improvements at mine sites in this watershed once improvements are completed. Collect missing core parameters to represent at least 3 seasons during an assessment period.	

UNNAMED TRIBUTARY TO COX GULCH From headwaters to Cox Gulch 15050301 – 890 1 miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&We – Impaired PBC – Impaired	Category 4A Not attaining	Cadmium, copper, zinc, and pH	Samples were collected on this reach in support of the Three R Creek TMDL. TMDL completed in 2003

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
No current data. Site file 100875				

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	
MONITORING RECOMMENDATIONS		Medium Priority – Need to implement corrective actions at mine sites along this tributary and its tributaries and then do effectiveness monitoring.	

HARSHAW CREEK From headwaters to Sonoita Creek 15050301 – 025 14.4 miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&We – Impaired PBC – Impaired AgL – Impaired	Category 4A Not attaining	Copper and pH	TMDL completed in 2003 for copper, zinc and pH. Zinc delisted as a result.

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
No current data. Site files: 100318, 100319, and 100848				

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	
MONITORING RECOMMENDATIONS		Medium Priority – Need to implement corrective actions at mine sites along Harshaw Creek and its tributaries and then do effectiveness monitoring.	

UNNAMED TRIBUTARY TO HARSHAW CREEK (Endless Chain Mine tributary) 15050301 – 888 2 miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&We – Impaired PBC – Impaired	Category 4A Not attaining	Copper and pH	Samples were collected on this reach in support of the Harshaw Creek TMDL. TMDL completed in 2003 for copper, pH and zinc. Zinc was delisted as a result.

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
No current data Site files: 100850, 100851				

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Missing all core parameters	Insufficient sampling events	
MONITORING RECOMMENDATIONS		Medium Priority – Need to implement corrective actions at mine sites along this unnamed tributary and then do effectiveness monitoring.	

HUMBOLT CANYON From headwaters to Alum Gulch 15050301 – 340 2 miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&We – Impaired PBC – Inconclusive	Category 4A Not attaining	Copper	Copper loading was assigned to this reach during the Alum Gulch TMDL.

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
No current data Site files:100840, 100841, and 100871				

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	
MONITORING RECOMMENDATIONS		Medium Priority – Need to implement corrective actions at mine sites along Humboldt Canyon and its tributaries and then do effectiveness monitoring.	

KENNEDY LAKE 15050301 – 0720 10 Acres	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATES: 07/18/2002; 09/19/2002		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Mid Lake SCKEN-B 101052	AGFD Ambient	1 dissolved metals only: Cadmium, chromium, copper, lead, nickel, selenium and zinc. or mercury	2 samples: Ammonia, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	2 Total dissolved solids

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority – Collect core parameters to represent at least three seasons during the assessment period. Use lower lab detection limit for selenium and dissolved mercury.	

LAKESIDE LAKE 15050302 -- 0760 15 Acres	USE SUPPORT		OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	ADEQ	A&Ww – Impaired PBC – Impaired FC – Inconclusive	Category 4A Not attaining (Impaired)	Ammonia, dissolved oxygen, and pH	TMDL completed in 2005 for nutrient related pollutants.
	EPA	A&Ww – Impaired PBC – Impaired FC – Inconclusive	Category 4A Not attaining	Chlorophyll, nitrogen, and phosphorus	TMDL completed in 2005 for nutrient related pollutants.

Light blue highlights indicate EPA impairments based on EPA assessment and listing criteria. This listing may change when EPA reviews and approves the 2006/2008 impaired waters list. Such listings do not satisfy requirements established in ADEQ's Impaired Water Identification Rule; therefore, they are not included in the list of ADEQ's Impaired waters (Appendix B & Appendix C).

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATES: 01/09/2002 – 10/29/2003		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At dam SCLAK-A 100034	ADEQ, U of A Ambient	1 dissolved and total metals: Cadmium, chromium, copper, lead, manganese, and zinc. 1 total metals only: Antimony, arsenic, barium, boron, lead, mercury, nickel, selenium, silver	46-55 samples: Ammonia, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen, dissolved oxygen, pH	2 Fluoride 46 Total dissolved solids 46 Turbidity 46 Algal samples 46 Chlorophyll samples
Mid lake SCLAK-B 100035	ADEQ, U of A Ambient			
At boat ramp SCLAK-R 102294	U of A Ambient			

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Ammonia	0.21 mg/L at pH 8.9 and 31.9 C A&Ww chronic	08/18/2003 – 0.43 mg/L	Remains impaired – 1 exceedance in the last 3 years of monitoring
Dissolved oxygen	6.0 mg/L A&Ww	07/18/2002 – 3.8 mg/L 08/12/2002 – 4.6 mg/L* 09/10/2002 – 5.3 mg/L* 05/01/2003 – 4.6 mg/L 06/11/2003 – 3.9 mg/L 06/18/2003 – 3.1 mg/L 06/26/2003 – 5.0 mg/L 08/11/2003 – 4.9 mg/L* 09/08/2003 – 3.9 mg/L	Remains impaired – Samples in 9 of 23 sampling events had low dissolved oxygen concentration. (Binomial) Conditions were generally the same at both site A and B. * Indicates that on these dates the dissolved oxygen was too low at 1 meter, but meeting standards at 0.5 meters or surface. Proposing changing designated use to "effluent dependent water, which has lower dissolved oxygen requirements.
pH	<9.0 SU A&Ww, PBC	08/12/2002 – 9.3 SU 08/27/2002 – 9.3 SU 09/25/2002 – 9.5 SU 10/09/2002 – 9.4 SU 10/24/2002 – 9.3 SU 08/11/2003 – 9.4 SU	Remains impaired – 6 of 23 sampling events had high pH values. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	**MISSING CORE PARAMETERS**	**MISSING SEASONAL DISTRIBUTION**	**DETECTION LIMITS NOT LOW ENOUGH**
	Insufficient core parameters	Insufficient sampling events	Lab detection limit for selenium and dissolved mercury were higher than A&W chronic criteria.
DISCUSSION OF IMPAIRMENT		Lake remains impaired due to ammonia, dissolved oxygen, and pH but is moved to Category 4A (from 5) due to completion of the nutrient TMDLs. Evidence of potential impairment by phosphorus, nitrogen, or chlorophyll: 1. Nutrient TMDL completed in 2005. Nutrient load reductions should address these pollutants; 2. Corrective actions are being taken by the City of Tucson to improve water quality at the lake; and 3. ADEQ has proposed narrative nutrient implementation guidance that indicates the following limits for an urban lake: Chlorophyll-a < 50 µg/L Total nitrogen <1.9 mg/L Total phosphorus < 0.160 mg/L At Lakeside Lake: Chlorophyll-a was above 50 µg/L on 12 dates. Nitrogen was routinely above 2.0 and as high as 5.9 mg/L. Phosphorus was routinely above 0.16 and as high as 0.51 mg/L	
MONITORING RECOMMENDATIONS		High Priority – Schedule follow-up monitoring to determine the effectiveness of water quality improvement actions taken at the lake. Collect core parameters to represent at least three seasons during an assessment period. Use lower lab detection limits for selenium and dissolved mercury.	

LOMA VERDE From headwaters to Tanque Verde Wash 15050302 – 268 4 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 05/14/2002 – 10/15/2003 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
In Saguaro National Park SCLMV003.51 101585	USGS Ambient	4 dissolved metals only: Antimony, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, nickel, silver, uranium, and zinc. 1 dissolved metals: Arsenic, selenium (0 total metals)	4 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen, total phosphorus, dissolved oxygen, and pH	4 Total dissolved solids 1 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	6.0 mg/L A&Ww	05/14/2002 – 2.2 mg/L	Inconclusive – Only 1 of 4 samples did not meet criterion; however, nutrients were extremely high (15.2 mg/L nitrogen, 1.8 mg/L phosphorus).

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Dissolved oxygen	Insufficient total metals and *E. coli* bacteria		
MONITORING RECOMMENDATIONS		Medium Priority – Collect additional dissolved oxygen samples due to exceedance. Collect missing core parameters to represent at least 3 seasons during the assessment period.	

MADERA CANYON CREEK From headwaters to unnamed tributary at 314342/1105250 15050301 – 322A 2.3 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Attaining FBC – Attaining FC – Inconclusive AgL – Inconclusive	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 04/25/2001; 09/21/2005-01/09/2006 Included 01/09/2006 data to assess additional designated uses		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below Sprung Spring SCMAD012.71 100588	ADEQ	3 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, copper, and zinc. 1-2 total and dissolved metals: barium, mercury, silver, thallium 3 total only: Boron, manganese 1 total and 3 dissolved: Lead	3 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	3 *E. coli* bacteria 3 Fluoride 3 Total dissolved solids 2 Suspended sediment concentration 4 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient total lead and mercury to assess FC and AgL.		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria in at least 1 sample.
MONITORING RECOMMENDATIONS		Low Priority – Collect missing core parameters to represent at least 3 seasons during an assessment period. Use lower lab detection limit for selenium and dissolved mercury	

MADRONA CREEK From headwaters to Rincon Creek 15050302 -- 138 7 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 11/08/2002 – 10/31/2003; 09/14/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Near Madrona Ranger Station SCMDN001.51 101628	USGS Ambient	3-4 dissolved and 0-1 total metals: Antimony, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, and zinc. 0-1 total and 0-1 dissolved metals: Arsenic,, mercury, selenium, nickel, silver, uranium	1 samples: Ammonia, total nitrogen, nitrite/nitrate, total Kjeldahl nitrogen 2 samples: Dissolved oxygen 4 samples: Total phosphorus 7 samples: pH	1 Fluoride 3 Total dissolved solids 2 Suspended sediment concentration

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient total metals, *E. coli* bacteria, and dissolved oxygen to assess designated uses.		
MONITORING RECOMMENDATIONS		Low Priority – Collect missing core parameters to represent at least 3 seasons during the assessment period.	

NOGALES WASH From Mexico border to Potrero Creek 15050301 – 011 6.2 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Ww – Impaired PBC – Impaired	Category 5 Impaired	*E. coli* bacteria, chlorine, ammonia, copper	On the 303(d) list due to *E. coli* bacteria, chlorine, ammonia, copper.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 03/07/2000 – 11/16/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Morley Street Tunnel SCNGW004.87 100251	ADEQ Ambient	17-25 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, and zinc. 10-11 dissolved and total metals: Barium, nickel, silver, thallium 8 total only: Boron, manganese 1 Selenium	23-24 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	19 *E coli* bacteria 23 Fluoride 23 Total dissolved solids 12 Suspended sediment concentration 24 Turbidity 3 Solvents and petroleum products

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Ammonia	Varies based on pH and water temperature A&Ww chronic	08/09/2000 – 6.1 mg/L 04/23/2001 – 3.3 mg/L 01/15/03 – 13 mg/L 09/09/03 – 6.2 mg/L 01/14/04 – 3.6 mg/L 09/15/04 – 1.2 mg/L	Remains impaired – 4 exceedances in last 3 years of monitoring (6 in the assessment period).
Chlorine	11 µg/L A&Ww acute	03/07/2000 – 210 µg/L 05/24/2000 – 130 µg/L 08/09/2000 – 130 µg/L 04/24/2001 – 480 µg/L	Remains impaired -- Chlorine exceeded criterion all 4 times measured (4 times within a 3 year period). Chlorine is being added to the stream flow to reduce risks due to high bacterial contamination.
Copper (dissolved)	22.2 µg/L at 180 mg/L hardness A&Ww acute	01/15/2003– 24 µg/L	Remains impaired – One exceedance in last 3 years of monitoring.
Dissolved oxygen	6.0 mg/L A&Ww	12/19/2001 – 5.0 mg/L 09/09/2003 – 3.1 mg/L 12/01/2003 – 4.6 mg/L 01/14/2004 – 4.7 mg/L	Inconclusive – 4 of 22 samples did not meet the dissolved oxygen standards. Binomial method requires at least 5 exceedances to be listed as impaired with 22 samples.
E. coli bacteria	235 CFU/100 ml PBC	Too many exceedances to list here. Maximum was 4,810,000 CFU/100 ml	Remains impaired – 11 exceedances during the assessment period. (Noted fewer exceedances in 2004 and 2005.)
Lead	15 µg/L PBC	03/07/2000 – 190 µg/L 09/09/03 – 100 µg/L	Attaining – Only 2 exceedances in 22 samples. (Binomial)
Selenium	2 µg/L A&Ww chronic	09/09/2003 – 5.2 µg/L	Attaining – Only 1 exceedance in 23 samples. (Binomial)
Suspended sediment concentration (SSC)	Geometric mean 80 mg/L A&Ww	09/09/2003 – 972 mg/L	Attaining – Criterion was exceeded once in 1 sample, but geometric mean was not exceeded. (The old turbidity standard (50) was exceeded in 5 of 24 samples.)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	**MISSING CORE PARAMETERS**	**MISSING SEASONAL DISTRIBUTION**	**DETECTION LIMITS NOT LOW ENOUGH**
Dissolved oxygen	Collected all core parameters		Lab detection limits for selenium and dissolved metals (lead, mercury, and nickel) were higher than the A&W chronic criteria in at least 3 samples.
COMMENTS CONCERNING EXCEEDANCES		Bacterial contamination and high ammonia levels are due to insufficient wastewater infrastructure in Mexico. The chlorine tablets are added to the stream to kill the bacteria; however, the chlorine is toxic to aquatic life.	
MONITORING RECOMMENDATIONS		High Priority – Collect samples to support TMDL development for *E. coli* bacteria, ammonia, chlorine, and copper. Collect dissolved oxygen samples due to exceedances. Use lower lab detection limit for selenium and dissolved metals.	

PARKER CANYON CREEK From Parker Canyon Dam to tributary at 312417 / 1102844 15050301 – 234A 3 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 09/27/2005 – 12/07/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below Parker Canyon Lake Dam SCPRK010.26 103524	ADEQ Ambient	1 total and dissolved metal samples: Antimony, arsenic, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, and zinc	2 samples: Dissolved oxygen and pH 1 sample: Ammonia, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	2 *E. coli* bacteria 1 Fluoride 2 Total dissolved solids 2 Turbidity 2 Suspended sediment concentration

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	6.0 mg/L A&Ww	09/27/05 – 2.6 mg/L 12/07/2005 – 5.8 mg/L	Attaining – Low dissolved oxygen due to low flow conditions and groundwater upwelling. Flow around 0.2 cfs. Low nutrient levels.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	Lab detection limit for selenium was higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority – Collect missing core parameters to represent at least 3 seasons during the assessment period. Use lower lab detection limit for selenium.	

PARKER CANYON LAKE 15050301 – 1040 130 Acres	USE SUPPORT		OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	ADEQ	A&Wc – Inconclusive FBC – Attaining FC – Inconclusive AgI – Attaining AgL – Attaining	Category 2 Attaining Some Uses		
	EPA	FC – Impaired	Category 5 Impaired	Mercury in fish tissue	EPA listed mercury in 2004 due to fish consumption advisory

Light blue highlights indicate EPA impairments based on EPA assessment and listing criteria. This listing may change when EPA reviews and approves the 2006/2008 impaired waters list. Such listings do not satisfy requirements established in ADEQ's Impaired Water Identification Rule; therefore, they are not included in the list of ADEQ's Impaired waters (Appendix B & Appendix C).

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 11/29/2000 – 11/22/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Dam SCPAK-A 100057	ADEQ Ambient	6-7 total and 4 dissolved: Cadmium, chromium, lead, nickel, zinc 7 and 1 dissolved metals: Antimony, arsenic, barium, beryllium, boron, copper, manganese, mercury	6-7 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	3 *E. coli* bacteria 7 Fluoride 3 Total dissolved solids 7 Turbidity
At boat ramp SCPAK-D	ADEQ Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	<7.0 mg/L A&Wc	11/29/2000 – 6.5 mg/L 10/09/2003 – 5.1 mg/L 11/22/2005 – 6.2 mg/L	Inconclusive – Did not meet dissolved oxygen criteria in 3 of 6 sampling events. (Binomial requires a minimum of 5 exceedances and 20 samples to be listed as impaired.)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Dissolved oxygen, mercury	Insufficient dissolved copper to assess A&W.		Lab detection limits for dissolved metals (cadmium, copper, lead, mercury, and silver) and selenium were higher than the A&W chronic criteria in at least 1 sample.
DISCUSSION OF MERCURY IMPAIRMENT		Evidence of potential mercury impairment: 1. Mercury fish consumption advisory issued in 2002 still exists; and 2. Two other lakes in this watershed are impaired by mercury (Pena Blanca and Arivaca lakes) which may indicate common source contributions.	
MONITORING RECOMMENDATIONS		High Priority – Collect mercury samples to support TMDL development. Collect dissolved oxygen samples due low levels. Elevated turbidity and low dissolved oxygen may be symptoms of excess nutrient loading. New methods for implementing the narrative nutrient standard should be applied to this lake once adopted, to determine whether narrative nutrient violations are occurring. Use lower lab detection limit for selenium and dissolved metals.	

PATAGONIA LAKE 15050301 – 1050 230 Acres	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wc – Inconclusive FBC – Inconclusive FC – Attaining DWS -- Attaining AgI -- Attaining AgL – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 11/28/2000 – 08/30/2001		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Dam SCPAT-A 100060	ADEQ Ambient	4 total and 0-1 dissolved: Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, and zinc	3-4 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	1 *E. coli* bacteria 3 Fluoride 1 Total dissolved solids 2 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	<7.0 mg/L A&Wc	08/30/2001 – 6.2 mg/L	Inconclusive – Did not meet dissolved oxygen criterion in 1 of 4 sampling events. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Dissolved oxygen	Insufficient metals (dissolved cadmium, copper, and zinc) and *E. coli* bacteria to assess A&W and FBC.		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Medium Priority –Collect more total dissolved oxygen samples due to exceedance. Low dissolved oxygen may be a symptom of excess nutrient loading. New methods for implementing the narrative nutrient standard should be applied to this lake once adopted, to determine whether narrative nutrient violations are occurring. Use lower lab detection limit for selenium and dissolved mercury.	

PENA BLANCA LAKE 15050301 – 1070 50 Acres	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Wc – Inconclusive FBC – Inconclusive FC – Impaired AgI – Inconclusive AgL – Inconclusive	Category 4A Not attaining	Mercury in fish tissue	TMDL for mercury was completed in 1999.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIODS: 11/28/2000 – 08/28/2001; 09/18/2003; 01/08/2004 – 09/28/2005 NUMBER AND TYPES OF SAMPLES Metals	Nutrients – Related	Other
At Dam SCPEN-A 100064	ADEQ and U of A Ambient	7-11 total and 3-5 dissolved: Cadmium, chromium, lead, nickel, silver, thallium, zinc 7-11 total and 0-1 dissolved metals: Antimony, arsenic, barium, beryllium, boron, copper, manganese, mercury, selenium	12 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	2 *E. coli* bacteria 10 Fluoride 4 Total dissolved solids 10 Turbidity
At boat ramp SCPEN-FR 102761	AGFD Ambient			
Mid Lake SCPEN-B 100065	ADEQ and U of A Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	<7.0 mg/L A&Wc	09/12/03-09/18/03 – 2.5 mg/L	Inconclusive – Did not meet dissolved oxygen criterion in 1 of 8 sampling events (multiple sites). (Binomial)
pH	<9.0 SU A&Wc, FBC, AgI, AgL	09/28/2005 – 12.5 SU	Inconclusive – Did not meet pH criteria in 1of 6 sampling events (multiple sites). (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Dissolved oxygen, pH	Insufficient dissolved copper		Lab detection limits for dissolved metals (cadmium, copper, lead, mercury, and silver) and selenium were higher than the A&W chronic criteria in at least 1 sample.

MONITORING RECOMMENDATIONS	
	Medium Priority – Collect samples to determine the effectiveness of TMDL load reduction strategies for mercury. Collect more total dissolved oxygen and pH samples due to exceedances. The old turbidity standard (10 NTU) was slightly exceeded on 2 dates. Low dissolved oxygen, high pH, and elevated turbidity may be symptoms of excess nutrient loadings. New methods for implementing the narrative nutrient standard should be applied to this lake once adopted, to determine whether narrative nutrient violations are occurring. Use lower lab detection limit for selenium and dissolved metals.

POTRERO CREEK From Interstate 19 to Santa Cruz River 15050301 – 500B 4.9 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 01/25/2000 – 01/11/2006 Included 01/11/2005 data to be able to assess more designated uses.		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Ruby Road SCPOT001.62 100571	ADEQ and Friends of the Santa Cruz River	3 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, and zinc. 3 total only: Boron, manganese 2 total and 3 dissolved: Mercury 1 total and 3 dissolved: Lead, copper	17-23 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	3 *E. coli* bacteria 2 Fluoride 3 Total dissolved solids 2 Suspended sediment concentration 19 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
E. coli bacteria	235 CFU/100 ml FBC	11/16/2005 – 648 CFU/100 ml	Inconclusive – Only 1 exceedance within the assessment period (3 samples).

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
E. coli bacteria	Insufficient dissolved and total copper, total lead, and total mercury to assess A&W, FC and AgL		Lab detection limits for selenium were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Medium Priority – Collect additional *E. coli* bacteria due to the exceedance. Collect missing core parameters to represent at least 3 seasons during an assessment period. Use lower lab detection limit for selenium.	

REDROCK CANYON From headwaters to Harshaw Creek 15050301 – 576 12.7 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Attaining FBC – Attaining FC – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 12/13/2000 – 09/19/2001 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Near Patagonia, AZ SCRED005.58 101080	ADEQ Ambient	4-5 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, nickel, silver, thallium, and zinc. 4 total only: Boron, manganese 4 total metals only: Mercury	4 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	4 *E. coli* bacteria 4 Fluoride 4 Total dissolved solids 4 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	<6.0 mg/L A&Ww	09/19/2001 – 5.2 mg/L	Attaining -- Low dissolved oxygen is naturally occurring due to low flows and ground water upwelling. Very low nutrients.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Collected all core parameters		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority – Use lower lab detection limit for selenium and dissolved mercury.	

RINCON CREEK From headwaters to Pantano Wash 15050302 – 008 16.2 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&We – Inconclusive PBC – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 04/25/2001; 09/21/2005-01/09/2006 Included 01/09/2006 data to assess additional designated uses		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Near Tucson, AZ SCRIN008.97 102170	AGFD Ambient	1 dissolved metal: Antimony, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, nickel, silver, and uranium. (0 total metals)	1 sample: Dissolved oxygen, pH	1 Suspended sediment

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	
MONITORING RECOMMENDATIONS		Low Priority – Collect missing core parameters to represent at least 3 seasons during an assessment period.	

ROSE CANYON LAKE 15050302 – 1260 7 Acres	USE SUPPORT		OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	ADEQ	A&Wc – Inconclusive FBC – Inconclusive FC – Attaining	Category 2 Attaining some uses		
	EPA	A&Wc – Impaired FBC – Impaired	Category 5 Impaired	pH	EPA added pH to 303(d) List in 2004 (Older data included in original listing)

Light blue highlights indicate EPA impairments based on EPA assessment and listing criteria. This listing may change when EPA reviews and approves the 2006/2008 impaired waters list. Such listings do not satisfy requirements established in ADEQ's Impaired Water Identification Rule; therefore, they are not included in the list of ADEQ's Impaired waters (Appendix B and Appendix C).

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 10/04/2000 – 08/14/2001 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Dam SCROS-A 100183	ADEQ Ambient	4 total metal samples: Antimony, arsenic, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, and zinc.	4 samples: Ammonia, total nitrogen, nitrate/nitrate, total phosphorus, total Kjeldahl nitrogen. 3 samples: Dissolved oxygen 5 samples: pH	1 *E. coli* bacteria 4 Fluoride 4 Total dissolved solids 4 Turbidity
At top of lake inlet SCROS-IN 101266	ADEQ Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
pH	<6.5 SU A&Wc, FBC	06/27/2001 – 6.1-6.3 SU 08/14/2001 – 6.0-6.3 SU	Inconclusive – 2 low pH values in 3 sampling events (4 samples).

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient dissolved metals and *E. coli* bacteria to assess A&W and FBC		
PH IMPAIRMENT DISCUSSION		Evidence of potential pH impairment: 1. All low pH values occurred below 4 meters deep in this seven acre lake, which may be associated with natural conditions; 2. No newer data since the original listing; and 3. A major wildfire occurred in this area in 2003 that may have further impacted water quality.	
MONITORING RECOMMENDATIONS		High Priority – Collect additional pH to support TMDL Low pH and turbidity may be symptoms of excess nutrient loading. New methods for implementing the narrative nutrient standard should be applied to this lake once adopted, to determine whether narrative nutrient violations are occurring. Collect missing core parameters.	

SABINO CANYON From unnamed tributary at 322328 / 1104700 to Tanque Verde Wash 15050302 – 014B 14.1 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Attaining DWS – Inconclusive AgI – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 12/14/2000 - 09/13/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Above East Fork Sabino Canyon SCSAB009.77 100635	ADEQ Ambient	6-9 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, nickel, silver, thallium, and zinc. 7 total and 0-1 dissolved: Boron, manganese, mercury 1 Selenium	8-9 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	4 *E. coli* bacteria 8 Fluoride 7 Total dissolved solids 1 Suspended sediment concentration 8 Turbidity 1 Cyanide
Above bridge 9 SCSAB007.15 102835	AGFD Ambient			
Near Tucson SCSAB005.40 101152	ADEQ Ambient			
Above bridge 1 SCSAB005.21 102834	ADEQ and AGFD Ambient			
At USGS gage SCSAB004.49 100260	USGS Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Cyanide	41 µg/L A&Ww acute	07/23/2003 – 120 µg/L	Inconclusive-- Exceeded in the only sample that was tested for cyanide. See "Aspen Fire" discussion below.
Dissolved oxygen	<6.0 mg/L A&Ww	09/20/2001 – 5.7 mg/L	Attaining – Low dissolved oxygen due to natural conditions. Very low flow (0.01 cfs) and ground water upwelling.
Lead	15 µg/L FBC and DWS	07/23/2003 – 202 µg/L 02/19/2004 – 1250 µg/L	Inconclusive – 2 exceedances in 8 samples. (Binomial method requires a minimum of 5 exceedances and 20 samples.) See "Aspen Fire" discussion below.
Manganese	980 µg/L DWS	07/23/2003 – 7820 µg/L	Attaining – Exceeded criteria in 1 of 7 samples (Binomial) Exceedance occurred immediately after "Aspen Fire" – see below.
Selenium	2.0 µg/L A&Ww chronic	07/23/2003 – 4.0 µg/L	Inconclusive – Exceeded in 1 sample during the last 3 years of monitoring. The lab detection limit on 6 other samples was above the criteria so could not be used to determine attainment. See "Aspen Fire" discussion below.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	**MISSING CORE PARAMETERS**	**MISSING SEASONAL DISTRIBUTION**	**DETECTION LIMITS NOT LOW ENOUGH**
Cyanide	Collected all core parameters		Lab detection limits for dissolved mercury and selenium were above the A&Ww chronic criteria.
ASPEN FIRE of 2003		A major wildfire burned 84,750 acres in the Coronado National Forest, including a major portion of Sabino Canyon's watershed. The fire started on 06/17/2003. Samples collected on 07/23/2003 reflect the impact of this fire on water quality with exceedances of cyanide, lead, manganese, and selenium criteria. The old turbidity criterion (50 NTU) was also exceeded on 07/23/2003 at 2800 NTU. Subsequent monitoring on 02/19/2004 and 09/13/2005 contained only a lead exceedance.	
MONITORING RECOMMENDATIONS		Medium Priority – Collect additional cyanide, lead, manganese, and selenium samples due to exceedances to determine any long term impacts of the fire. Use lower lab detection limits for dissolved mercury and selenium. Longer term impacts of erosion and sedimentation should be studied. Collect suspended sediment concentration (SSC) samples. Recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted.	

SANTA CRUZ RIVER From headwaters to Mexico border 15050301 – 268 13.9 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Attaining FBC – Attaining FC – Attaining DWS – Attaining AgI – Attaining AgL – Attaining	Category 1 Attaining all uses	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 12/13/2000 – 09/19/2001		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Near Lochiel SCSCR169.35 100242	ADEQ Ambient	4 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, nickel, silver, thallium, and zinc. 4 total metals only: Boron, manganese, mercury	4 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	3 *E. coli* bacteria 4 Fluoride 4 Total dissolved solids 4 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Collected all core parameters		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority – Use lower lab detection limit for selenium and dissolved mercury.	

SANTA CRUZ RIVER From Mexico border to Nogales Intl WWTP discharge 15050301 – 010 17.0 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Ww – Attaining FBC – Impaired FC – Inconclusive AgI – Attaining AgL – Attaining	Category 5 Impaired	*E. coli* bacteria	Listed due to *E. coli* bacteria since 2002. TMDL has been delayed because drought has resulted in no stream flow.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 01/25/2000 – 12/09/2001 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At International boundary with Mexico SCSCR128.27 100239	ADEQ Ambient	7-8 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, nickel, silver, thallium, and zinc. 8 total metals only: Boron, manganese, mercury	15-17 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	8 *E. coli* bacteria 8 Fluoride 8 Total dissolved solids 18 Turbidity
At Guavai Ranch SCSCR119.01 100246	ADEQ and Friends of the Santa Cruz River Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Dissolved oxygen	<6.0 mg/L A&Ww	02/29/2000 – 5.5 mg/L 05/24/2000 – 5.4 mg/L 08/09/2000 – 4.3 mg/L	Attaining -- Low dissolved oxygen levels are naturally occurring due to ground water upwelling and low flows was less than 0.5 cfs.
E. coli bacteria	235 CFU/100 ml FBC	08/09/2000 – 10,000 CFU/100 ml	Remains impaired – One exceedance last 3 years monitored.
Mercury	0.6 µg/L FC	09/18/2000 – 0.8 µg/L	Inconclusive -- 1 exceedance in 8 samples. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Mercury	Collected all core parameters		Lab detection limits for selenium and dissolved metals (lead, mercury, and nickel) were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		High Priority – Collect *E. coli* bacteria samples to support TMDL development. Collect mercury samples due to exceedance. Use lower lab detection limit for selenium and dissolved metals. The old turbidity standard (50 NTU) was exceeded in 2 samples out of 11 (53 and 100 NTU). Collect SSC samples to determine if excessive suspended sediment is occurring. Recommend using biocriteria assessments and bottom deposits implementation procedures in this reach, when they are adopted.	

SANTA CRUZ RIVER From Nogales Intl WWTP discharge to Josephine Canyon 15050301 – 009 9.1 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wedw – Inconclusive PBC – Attaining AgL – Inconclusive	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 01/25/2000 – 11/15/2005 (Full suite only on 09/21/2005)		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Rio Rico SCSCR111.66 100238	ADEQ and Friends of the Santa Cruz River Ambient	1 dissolved and total metals: Antimony, arsenic, cadmium, and zinc. 1 total only: Beryllium, boron, manganese 1 dissolved only: Chromium, copper, lead 4 total metals only: Mercury	17-32 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	3 *E. coli* bacteria 1 Fluoride 1 Total dissolved solids 1 Suspended sediment concentration 34 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient dissolved and total metals.	Insufficient sampling events.	Lab detection limits for selenium were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Low Priority – Collect missing core parameters to represent at least 3 seasons during an assessment period. Use a lower lab detection limit for selenium.	

SANTA CRUZ RIVER From Josephine Canyon to Tubac Bridge 15050301 – 008A 4.8 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wedw – Inconclusive PBC – Attaining AgL -- Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 01/25/2000 – 10/01/2001; 09/29/2004 NUMBER AND TYPES OF SAMPLES Metals	Nutrients – Related	Other
At Santa Gertrudis Lane SCSCR103.45 100247	ADEQ and Friends of the Santa Cruz River Ambient	4 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, nickel, silver, thallium, and zinc. 4 total metals only: Boron, manganese, mercury	20-24 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	3 *E. coli* bacteria 4 Fluoride 4 Total dissolved solids 35 Turbidity 2 Chlorine (free residual)
At Tubac, AZ SCSCR103.39 USGS #09481740 101002	ADEQ Special Inv			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Chlorine	11 µg/L – A&Wedw acute	02/27/2001 – 90 µg/L	Inconclusive – One of 2 chlorine residual samples exceeded water quality criterion.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Chlorine	Collected all core parameters		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Medium Priority – Collect more total chlorine residual samples due to exceedance. Use lower lab detection limit for selenium and dissolved mercury.	

SANTA CRUZ RIVER From Tubac Bridge to Sopori Wash 15050301 – 008B 8.9 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&We – Inconclusive PBC – Inconclusive AgL – Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD: 01/25/2000 – 09/29/04; 09/21/2005		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Tubac Bridge SCSCR099.40 100243	ADEQ and Friends of the Santa Cruz Ambient	1 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, and zinc. 1 total only: Boron, manganese, selenium	18-46 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	1 *E. coli* bacteria 1 Fluoride 1 Total dissolved solids 1 Suspended sediment concentration 44 Turbidity
North of Chaves Siding Road SCSCR096.72 100244	ADEQ and Friends of the Santa Cruz Ambient			

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
E. coli bacteria	235 CFU/100 ml FBC	09/21/2005 – 650 CFU/100 ml	Inconclusive – Criterion exceeded in the only sample tested. Sample had very high nutrient levels, and site is just downstream of where the Effluent Dependent Water classification ends.
pH	<6.5 SU A&We, PBC, AgL	02/29/2000 – 2.6 SU	Attaining – Only 1 exceedance in 46 samples. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
E. coli bacteria	Insufficient core parameters	Insufficient sampling events.	
MONITORING RECOMMENDATIONS		Medium Priority – Collect more *E. coli* bacteria samples due to exceedance. Collect missing core parameters to represent at least 3 seasons during an assessment period.	

SANTA CRUZ RIVER From Canada del Oro to HUC boundary 15050301 15050301 – 001 8.6 Miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Wedw – Inconclusive PBC – Attaining	Category 2 Attaining some uses	

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIODS: 01/03/2001 – 10/02/2001; 09/12/2005 – 11/15/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Near Marana SCSCR034.56 101081	ADEQ Ambient	4-5 dissolved and total metals: Antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, silver, thallium, and zinc. 5 total only: Boron, manganese 5 total metals only: Mercury	5 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	4 *E. coli* bacteria 5 Fluoride 5 Total dissolved solids 1 Suspended sediment concentration 4 Turbidity 3 Chlorine (free residual)

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Chlorine	11 µg/L A&Wedw acute	02/26/2001 –480 µg/L 10/02/2001 –70 µg/L	Inconclusive – 2 exceedances in a 3-year period; however, wastewater treatment facility had a permit variance at the time.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
Chlorine	Collected all core parameters		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
MONITORING RECOMMENDATIONS		Medium Priority – Collect more total chlorine residual samples due to the exceedance. Use lower lab detection limit for selenium and dissolved mercury.	

SONOITA CREEK From 750 feet below Patagonia WWTP discharge to Patagonia Lake 15050301 – 013C 9.03 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&Ww – Impaired FBC – Attaining FC – Attaining AgI -- Attaining AgL -- Attaining	Category 5 Impaired	Zinc and low dissolved oxygen	Added zinc to 303(d) list in 2004. Moved low DO from 4B back to 5

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING PERIOD 12/12/2000 – 09/19/2001; 09/28/2005 – 12/08/2005 NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
At Circle Z Ranch SCSON014.52 101154	ADEQ Ambient	4-5 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, nickel, silver, thallium, and zinc. 4 total and 0-1 dissolved: Boron, manganese, mercury	5 samples: Ammonia, dissolved oxygen, pH, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen	6 *E. coli* bacteria 5 Fluoride 6 Total dissolved solids 1 Suspended sediment concentration 6 Turbidity

EXCEEDANCES			
POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Zinc	379 µg/L at >400 hardness A&Ww acute	12/12/2000 – 800 µg/L 04/13/2001 – 860 µg/L 09/28/2005 – 760 µg/L	Remains impaired -- Two exceedances in a 3 year period (2000-2001) Site is downstream of a WWTP discharge and downstream of several historic mining sites.

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Collected all core parameters		Lab detection limits for selenium and dissolved mercury were higher than the A&W chronic criteria.
LOW DISSOLVED OXYGEN IMPAIRMENT		Low dissolved oxygen is occurring in the reach just below the reach receiving Patagonia's WWTP effluent discharge. The discharge rapidly goes subsurface. ADEQ is lengthening the reach designated as A&Wedw to include the site where low dissolved oxygen was measured.	
MONITORING RECOMMENDATIONS		High Priority – Collect zinc samples to support TMDL development. Collect dissolved oxygen samples in the reach below the proposed EDW. Use lower lab detection limit for selenium and dissolved mercury.	

SYCAMORE CANYON From headwaters to Mexico border 15080200 -- 002 9.9 miles	USE SUPPORT	OVERALL ASSESSMENT	
	A&Ww – Inconclusive FBC – Inconclusive FC – Inconclusive AgL -- Inconclusive	Category 3 Inconclusive	

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATES: 04/24/2001 NUMBER AND TYPES OF SAMPLES Metals	Nutrients – Related	Other
Above Penasco Canyon SCSYR004.21 100660	ADEQ Ambient	1 dissolved and total metals: Antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, nickel, silver, thallium, and zinc. 1 total metals only: Boron, manganese, mercury.	1 sample: Ammonia, total nitrogen, total phosphorus, nitrite/nitrate, total Kjeldahl nitrogen, dissolved oxygen, pH	1 Fluoride 1 Total dissolved solids 1 Turbidity

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
No Exceedances			

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient sampling events	Lab detection limits for selenium and dissolved mercury are higher than the A&Ww criteria.
MONITORING RECOMMENDATIONS		Low Priority –Collect core parameters to represent at least three seasons during an assessment period. Use lower lab detection limits for selenium and dissolved mercury.	

THREE R CANYON From headwaters to 312835 / 110 4619 (latitude/longitude where intermittent flow begins) 15050301 – 558A 2.3 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&We – Impaired PBC – Impaired AgL – Impaired	Category 4A Not attaining	Cadmium, copper, zinc, and pH	TMDL completed in 2003. Need to implement improvements at mining sites.

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE:		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
No current data Data files: 100852				

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters		
MONITORING RECOMMENDATIONS		Low Priority – Additional monitoring should be scheduled to determine effectiveness of improvements at mine sites in this watershed once improvements are completed.	

UNNAMED TRIBUTARY TO THREE R CANYON From headwaters to Three R Canyon 15050301 – 889 2 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&We – Impaired PBC – Impaired	Category 4A Not attaining	Cadmium, copper, zinc, and pH	TMDL completed in 2003. Need to implement improvements at mining sites.

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE:		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
No current data Data file: 100874				

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters		
MONITORING RECOMMENDATIONS		Low Priority – Additional monitoring should be scheduled to determine effectiveness of improvements at mine sites in this watershed once improvements are completed.	

THREE R CANYON From 312835 / 110 4619 to 312827 / 1104712 (intermittent flow) 15050301 – 558B 1 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&We – Impaired PBC – Impaired FC -- Inconclusive AgL -- Impaired	Category 4A Not attaining	Cadmium, copper, zinc, and pH	TMDL completed in 2003. Need to implement improvements at mining sites.

MONITORING USED IN THIS ASSESSMENT

SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: 01/11/2000		
		NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
Below uppermost spring SCTHC003.83 100872	ADEQ TMDL	1 total and dissolved metal sample: Beryllium, cadmium, copper, and zinc	pH – 1 sample	

EXCEEDANCES

POLLUTANT	STANDARD UNIT DESIGNATED USES	DATES EXCEEDANCES	DESIGNATED USE SUPPORT SUPPORTING EVIDENCE AND COMMENTS
Copper	500 µg/L – AgL 1300 µg/L – FBC	01/11/2000 – 50.000 µg/L	Remains impaired – Exceeded in only sample collected during this assessment period. (Binomial)
Copper (dissolved)	8.7 µg/L at 63 mg/L hardness A&W acute	01/11/2000 – 49.000 µg/L	Remains impaired – Exceeded in only sample collected during this assessment period.
Cadmium (dissolved)	2.6 µg/L at 63 mg/L hardness A&W acute	01/11/2000 – 47 µg/L	Remains impaired – Exceeded in only sample collected during this assessment period.
Zinc (dissolved)	79 µg/L at 63 mg/L hardness A&W acute	01/11/2000 – 1400 µg/L	Remains impaired – Exceeded in only sample collected during this assessment period.
pH	<6.5 SU A&Ww, FBC, AgL	01/11/2000 – 2.9 SU	Remains impaired – Exceeded in only sample collected during this assessment period. (Binomial)

Pollutant: Assume "total" concentration, unless shown as dissolved.
Frequency Exceed = Samples collected within a 7-day period are aggregated and counted as one sample per site.

DATA GAPS AND MONITORING NEEDS

EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters	Insufficient monitoring events	
MONITORING RECOMMENDATIONS		Medium Priority – Collect samples during critical conditions to determine effectiveness of improvements at mine sites in this watershed once improvements are completed. Collect missing core parameters to represent at least 3 seasons during an assessment period.	

THREE R CANYON From 312827 / 1104712 to Sonoita Creek (ephemeral segment) 15050301 – 558C 3 Miles	USE SUPPORT	OVERALL ASSESSMENT	POLLUTANTS CAUSING IMPAIRMENT	IMPAIRMENT STATUS
	A&We – Impaired PBC – Impaired AgL – Impaired	Category 4A Not attaining	Cadmium, copper, zinc, and pH	TMDL completed in 2003. Need to implement improvements at mining sites.

MONITORING USED IN THIS ASSESSMENT				
SITE NAMES ID # DATABASE #	AGENCY PURPOSE	SAMPLING DATE: NUMBER AND TYPES OF SAMPLES		
		Metals	Nutrients – Related	Other
No current data				

DATA GAPS AND MONITORING NEEDS			
EXCEEDANCES NEEDING MORE SAMPLES TO ASSESS	MISSING CORE PARAMETERS	MISSING SEASONAL DISTRIBUTION	DETECTION LIMITS NOT LOW ENOUGH
	Insufficient core parameters		
MONITORING RECOMMENDATIONS		Low Priority – Collect samples during critical conditions determine effectiveness of improvements at mine sites in this watershed once improvements are completed. Collect missing core parameters to represent at least 3 seasons during an assessment period.	